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DOI (link to publication from Publisher):
10.5278/vbn.phd.hum.00026

Publication date:
2014

Document Version
Publisher's PDF, also known as Version of record

LEARNING FROM EXPERIENCE IN THE CONTEXT OF WORK

A SEVEN-YEAR STUDY OF PROACTIVE REVIEW AS AN EDUCATIONAL DESIGN FOR LEARNING FROM EXPERIENCE IN A GLOBAL, HIGH-TECH COMPANY CLASSIFIED AS BIG BUSINESS

BY
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DISSERTATION SUBMITTED 2014

AALBORG UNIVERSITY
DENMARK

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A seven-year study of Proactive Review as an educational design for learning from experience in a global, high-tech company classified as big business

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December 2014

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PhD Series:	Faculty of Humanities, Aalborg University

ISSN: 2246-123X
ISBN: 978-87-7112-201-5

Published by:
Aalborg University Press
Skjernvej 4A, 2nd floor
DK – 9220 Aalborg Ø
Phone: +45 99407140
aauf@forlag.aau.dk
forlag.aau.dk

Printed in Denmark by Rosendahls, 2014

CV

Ditte Kolbæk received her Master of Information Technology and Learning degree in 2003. She also holds a bachelor's degree in Marketing Economics and a bachelor's degree in Professional Teaching. Ditte worked from 2005 to 2012 as Manager of Organizational Learning at Oracle Europe, the Middle East and Africa (EMEA). She started as a PhD student at the Department of Philosophy and Learning, Aalborg University, Denmark in 2012. Ditte is affiliated with ILD, the laboratory of IT and Learning Design, where she is a core member. Her research interests are in the fields of learning sciences, organizational learning, organizational knowledge and human–computer interaction. She has published in international and Danish journals, such as *Knowledge Management: An International Journal* and *Erhvervspsykologi* and has contributed to an anthology titled *Utilizing Evidence-Based Lessons Learned for Enhanced Organizational Innovation and Change* published by IGI Canada. In 2011, DJØF Denmark, published Ditte's book *Proactive Review*; in 2012, ARK Group, UK published her article *Oracle – carrying out Proactive Reviews* and in 2013, they published her article *Measurements on Proactive Reviews*. Ditte is a methodological researcher experienced in design-based research, specifically in qualitative methods. In her PhD thesis, Ditte explores what we can learn from the development of an educational design for learning from experience in the context of work, when work is situated in a global IT company classified as big business.

ENGLISH SUMMARY

My aim for this PhD study is to provide a deeper understanding of how to initiate and maintain learning from experience in the context of work.
The development from an industrial-based economy to an information-based economy has increased the demand for employees to learn continuously, especially in fast-moving industries like high tech. This PhD study is placed in the research fields of organizational learning and organizational knowledge and explores organizational learning from a learning perspective. It looks into the development of an educational design for learning from experience in the context of work. The educational design is called Proactive Review (PR) and includes two opposite directions simultaneously, proactive, which entails looking ahead and review, which entails reflecting on the past. The subjects for learning in a PR may be any group of employees that have solved a task together and their manager.

Originally, the development of PR was not a research project but a task for me to solve in my role as Manager of Organizational Learning, Europe, the Middle East and Africa (EMEA) in a global IT company listed in the top 30 global companies by PricewaterhouseCoopers (PwC) in 2013. The development of PR began as a pilot project in 2005 and finished in 2012 when I left the company. Shortly after, I began my PhD studies in which I intended to explore and explain the theoretical background for PR and to learn from my experience at the IT company in the light of the theories and methodologies I studied at university.

The theoretical concepts in this PhD study include John Dewey's 'reflective thought and action' illustrated as a spiral in Miettinen, Nonaka and Takeuchi's spiral 'SECI model' and Engeström's spiral model of 'expansive learning'. The PhD thesis discusses these spirals, what starts or stops them, how to continue the move along the spiral and whether the move goes up or down. The spirals are placed in context, and this context is discussed in the thesis.

Even though design-based research (DBR) is developed for studying classroom training, I have utilized it as a core methodology, as I study organizational learning from a learning

perspective. The guidelines for DBR is discussed and slightly changed, and a new DBR flow is suggested. The PhD thesis is mainly based on qualitative methods which will be presented and discussed. My mixed role as researcher, developer, PRs trainer and former Manager of Organizational Learning at a global IT company will be described and discussed.

The exploration of PR in the global IT company includes six iterations of the development of the educational design described in three articles, a chapter in a book and a paper for the 2014 Organizational Learning, Knowledge and Capabilities conference. These 'articles' are presented one by one, along with my reflections on the article. My reflections follow the new DBR flow.

My contributions to the research fields of organizational learning and organizational knowledge are new theories on learning in the context of work, for example, a new learning spiral that includes three ontological dimensions for learning. New perspectives on the DBR methodology, including a sequence of nine elements for thorough exploration, are proposed, as well as new practices for practitioners in the field, more specifically an educational design of seven questions called PR, four roles involved in PR and suggestions for organizational requirements and codes of conduct that support learning from experience in the context of work

RESUME PÅ DANSK

Mit mål med dette Ph.d. studium er at opnå en dybere forståelse af hvordan man kan igangsætte og vedligeholde det at lære af erfaringer på arbejdspladsen.

Udviklingen fra industrisamfund til informationssamfund har nødvendiggjort arbejdskraftens uafbrudte læring, især i hurtigt voksende brancher som high tech. Dette Ph.d. studium placerer sig i de videnskabelige felter kaldt organisatorisk læring og organisatorisk viden, og jeg vil undersøge organisatorisk læring fra et læringsperspektiv. Ph.d. afhandlingen undersøger udviklingen af et didaktisk design til at lære af arbejdsmæssige erfaringer. Det didaktisk design hedder Proactive Review (PR), som indeholder to modsatrettede bevægelser, nemlig 'proactive' som peger fremad mod fremtiden og 'review' som peger bagud mod fortiden. De lærende i PR kan være en hvilken som helst gruppe af medarbejdere samt deres chef.

Udviklingen af PR begyndte ikke som et forskningsprojekt, men som en arbejdsopgave jeg skulle løse i min rolle som leder af organisatorisk læring i Europa, Mellemøsten og Afrika (EMEA) i en stor, global IT virksomhed. Udviklingen af PR begyndte med et pilot projekt i 2005 og sluttede i 2012, da jeg forlod virksomheden. Kort efter begyndte jeg mine Ph.d. studier, som undersøger og forklarer det teoretiske fundament for PR, og udforsker egne erfaringer med PR i lyset af teorier og metoder, som jeg tilegnede mig på universitetet.

Dette Ph.d. studium er baseret på teoretiske overvejelser som John Dewey's 'reflective thought and action' illustreret som en spiral af Miettinen, Nonaka and Takeuchi's 'SECI model' som også fremstår som en spiral samt Engeström's spiralmodel, som han kalder 'expansive learning'. Ph.d. afhandlingen diskuterer disse spiraler: Hvordan sættes de i gang og stoppes igen? Hvad får de(n) lærende til at bevæge sig langs spiralen, og hvad skal der til for at fortsætte op eller ned af spiralen? Desuden diskuteres indflydelsen af konteksten, som spiralen er en del af. Selvom design-based research (DBR) er udviklet til at studere læring i et klasserum, er DBR valgt som metodologi for afhandlingen for at undersøge organisatorisk læring fra et læringsperspektiv. Retningslinjerne for DBR vil blive diskuteret, og de vil blive ændret til et nyt 'DBR-forløb'. Denne afhandling er fortrinsvis baseret på kvalitative metoder, som bliver præsenteret og diskuteret. Mine

blandede roller som forsker, udvikler af det didaktiske design, underviser i PR og tidligere leder af organisatorisk læring (EMEA) bliver beskrevet of diskuteret.

Undersøgelsen af PR i den store, globale IT virksomhed indeholder seks iterationer (forløb) af udviklingen af det didaktiske design, som er beskrevet i tre artikler, et kapitel i en bog og et forlæg til 2014 Organizational Learning, Knowledge and Capabilities (OLKC) konferencen. Disse 'artikler' bliver præsenteret én for én i kapitel 4 sammen med mine refleksioner over artiklerne. Disse refleksioner følger det DBR flow som jeg udviklede tidligere i Ph.d. studiet.

Mine bidrag til de videnskabelige felter 'organisatorisk læring' og 'organisatorisk viden' er ny teori om læring på arbejdspladsen blandt andet en lærings spiral, som indeholder tre ontologiske dimensioner, og nye perspektiver på metodologien DBR, hvor jeg tilføjer en sekvens på otte elementer, som kan følges når et felt udforskes. Dertil kommer nye praksisser for dem, som arbejder i praksis med læring på arbejdspladsen fx det didaktiske design kaldt PR som består af syv spørgsmål, fire roller, et forslag til organisatoriske forudsætninger samt normer og regler for at etablere og vedligeholde PR som didaktisk design til at lære af erfaringerne på arbejdspladsen.

ACKNOWLEDGEMENTS

The people mentioned below have had a huge impact on my way of thinking and acting, not only in the context of doing a PhD study, but in the context of my lived life. 'Thank you' may seem inadequate, but I say it from the bottom of my heart.

For many years I was tempted to take on the challenge of 'doing a PhD', but I hesitated—mostly because I told myself I was too old for that, and I was afraid that I would be disappointed if I lived out my dream. Fortunately, professor Birgitte Holm Sørensen and professor Lone Dirckinck-Holmfeld encouraged me continually over several years to come and collaborate with academia. I am grateful they did. They made it possible for me to live out my dream of studying and teaching, not only in my spare time but as a full time job. Thank you Birgitte and Lone for making it possible for me to travel into unknown territories and face mysteries; hopefully I have solved some of them during this PhD study. It has been a wonderful voyage, without any disappointments so far.

Lars Birch Andreasen, my principal supervisor, has been my smiling guide during this voyage of discovery. Lars helped me prioritise the mysteries I found and rescued me from monsters I met. Thank you Lars for your patience during our discussions and for keeping up a good spirit no matter the mysteries or monsters I presented.

Throughout my PhD study, I have been affiliated with ILD, the laboratory of IT and Learning Design. This environment is inhabited by good fairies, wise wizards and sharp scientists, sometimes all in one person. The wisdom and insights here are overwhelming and very motivating for enhancing one's own abilities and knowledge. Special thanks to Anne-Mette Nortvig for taking the time to read and give feedback on the article *Proactive Reviews, Expanding Personal Experience to Organizational Learning* and for very interesting discussions. I highly appreciate that Professor Morten Misfeldt included me in one of his projects and that he made it possible for me to travel to foreign territories in Sweden.

One of the unknown territories was writing articles for scientific journals. I heard from fellow PhD students that this could easily turn out to be a desert in which you dried out before you reached an oasis. I want to thank Professor Mark Lorenzen from the Copenhagen Business School for supplying me the navigation tools

to lead me safely through the desert. And I am grateful to Professor Jane McKenzie from the Henley Business School for accompanying me through the process of writing the article *Prerequisites for dialogue as the basis for learning in the context of work*, especially for her patience with me during the myriad of mysteries I faced and had difficulty solving.

This exciting voyage through unknown territories included presentations at conferences, including the 2014 International Conference on Organizational Learning, Knowledge and Capabilities in Oslo, which has had a huge impact on this PhD study.

I want to thank Professor Silvia Gherardi for inspiring feedback on my doctoral paper and for great metaphors on knowledge and knowing and Professor Bente Elkjaer for stimulating conversations over several days and for introducing me to the work of John Dewey.

I owe a great deal to Professor Lars Svensson for encouraging feedback on my conference paper and for inviting me to stay a few months at Högskolan Väst, Trollhättan, Sweden which allowed me to concentrate on the writing process. At Högskolan Väst, Department of Economy and IT, I met enthusiastic fellows who welcomed me and included me in conversations and discussions even though I was just a stranger passing through. I would like to thank Professor Carsten Sørensen for bringing my attention to the structure of the PhD thesis and for pointing out areas of improvement regarding the research question. Most of all, I want to thank Ulrika Lundh-Snis for her great support, detailed feedback, friendliness and good sense of humour.

A special thanks to Jeanette Mie Arboe for answering all sorts of questions about the formalities in a PhD study and for administrative support and guidance.

I owe a great deal to the wonderful PRs facilitator community of practice, who engaged in the development of a robust educational design for learning from experience in the context of work and who drove the implementation throughout the IT company in Europe, the Middle East and Africa.

This voyage of learning started long before I started this PhD study, and I want to thank journalists Rie and Anders Jerichow for rewarding discussions of the name of the educational design that

turned out to be PR. I also thank Dr. Svend Rand-Hendriksen for asking 'stupid' questions like: '…but CAN an organization learn?'

I sincerely hope the voyage continues. There is a whole world waiting out there with new mysteries that need to be solved, and I will dare to explore them as long as my encouraging husband Ole and my supportive son Ole-Bjørn travel by my side. Without them, this voyage would not have been possible.

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The chapters start up with an illustration for inspiration

.

1 POINT OF DEPARTURE

Please allow me to welcome you and to set the scene for your reading. My aim for this PhD study is to provide a deeper understating of how to initiate and maintain learning from experience in the context of work. My contributions are new theories on learning in the context of work, new perspectives on the design-based research (DBR) methodology and new practices for practitioners in the field.

This PhD study explores the invention and implementation of an educational design for learning from experience in the context of work. The educational design was developed and implemented in a global IT company that PricewaterhouseCoopers (PwC) placed on the list of the top 30 companies in the world. The size of the company is measured by its financial transactions and its position in the list classifies the global IT company as 'big business' (PwC, 2013; Cassis, 1997).

The educational design was conceived in 2005. Development continued for seven years and included a number of iterations, some of which will be explored in this PhD thesis. The research approach is inductive, going from practice to developing new practices and theories. The thesis is founded on the following publications:

Table 1. Publications included in this PhD thesis

Authors	**Publication**	**Article no in chapter**
Ditte Kolbaek	Proactive Reviews: Expanding personal experience to organizational learning. *Knowledge Management, an International Journal, 13*(2), 2014, pp. 13–25	1 Chapter 4.2

Ditte Kolbaek	Proactive Reviews: Fra personlig viden til organisatorisk læring. *Erhvervspsykologi, 11(* 4), 2013.	2 Chapter 4.3
Ditte Kolbaek, 90%; Jane McKenzie, 10%	Prerequisite for dialogue as the basis for learning in the context of work Publication in process.	3 Chapter 4.4
Ditte Kolbaek	Proactive Review Chapter 5 in McIntyre, S, Dalkir K., Paul P., & Kitimbo I.C. (Eds.) (2014*). Utilizing evidence-based lessons learned for enhanced organizational innovation and change*. Business Science Reference. An imprint of IGI Global, pp. 82–100	4 Chapter 4.5
Ditte Kolbæk	*Online Proactive Reviews.* Paper presented at the OLKC conference, Oslo, 22–24 April 2014.	5 Chapter 4.6

In this section, I will place the PhD project in the state of the art. The research question will be presented, including five sub-questions that mirror the iterations presented in this PhD study. Theoretically, I focus on the spiral as a metaphor for learning, and I draw on John Dewey's (1976) theoretical concepts of individual experience and include Nonaka and Takeuchi's (1995) SECI model as a lens for exploring learning in teams (The SECI model contains socialization (S), externalization (E), combination (C) and internalization (I)) and Engeström's (2001) spiral of expansive learning to study organizational learning. The methodology is DBR that aims to understand the confusion of real-word practice. DBR is designed for educators and intended to improve educational theory and practices (Anderson & Shattuck, 2012). I utilize mixed methods, including diaries, chats, future workshops, unsolicited feedback, interviews, observation and monthly and annual reports. The data were collected over a period of seven years. Amongst the results of this PhD study is an educational design for learning in the context of work and a learning spiral. The educational design is called Proactive Review (PR), which includes four ontological dimensions of learning—individual learning, team learning, organizational learning and inter-organizational learning.

1.1 POSITIONING ORGANIZATIONAL LEARNING

Value creation in the Western world has come to rely more heavily on intangible resources. This move from an industrial-based economy to an information-based economy demands new organizational capabilities and human skills (Qvortrup, 2000), which in turn depend on a systemic capacity to learn continuously (Easterby-Smith & Prieto, 2008). At the macro level, there is growing evidence that organizations produce superior results when they have the capability to facilitate the necessary interactions to support and advance knowledge creation and use (Holsapple & Wu, 2011; Akhtar & Khan, 2011). Enabling employees to learn in the context of work helps to improve business results, competitive advantages and revenue (Nonaka & Takeuchi, 1995).

The research field of learning from experience in the context of work may be described as organizational learning, the learning organization, knowledge creation or knowledge management. According to Easterby-Smith and Lyles (2011), the field spreads out between the dichotomy of theory and practice in the horizontal dimension and the dichotomy of processes and content in the vertical dimension. The upper part of the model includes learning that is seen as the process of acquiring knowledge, and the content of knowledge is based in the lower part of the model.

Map of the research field

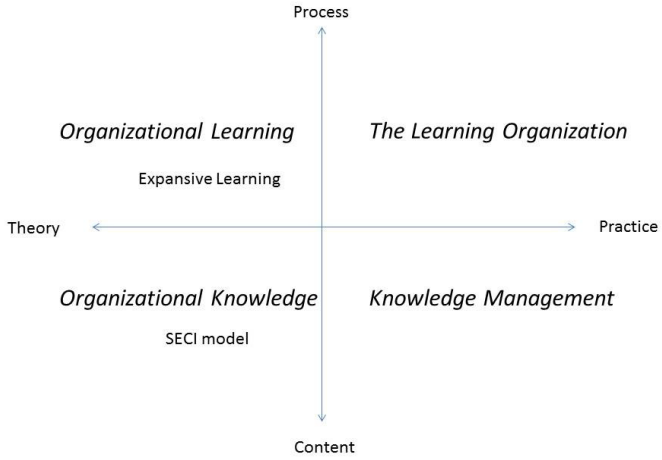

Figure 1. Concepts of learning and knowledge in organizations (of my own making based on Easterby-Smith & Lyles, 2011)

Organizational learning and the learning organization deal with the processes of learning in organizations. The distinction between them is the approach: on the left-hand side of the model, the approach to learning is more theoretical-based and on the right-hand side, the approach to learning is more practice-based. The left-hand side of the model turns to academia, whereas the right-hand side turns to the practitioners. The lower part of the model focuses on knowledge. The theoretical approach to knowledge includes the consideration of knowledge being tacit or explicit. The practice approach to knowledge is called knowledge management, which deals with measuring, disseminating and storing knowledge (Easterby-Smith & Lyles, 2011). The distinction between the lower and the upper part of the model is the change from focusing on content to focusing on the processes of learning.

Originally, this was not a research project but a task for me to solve in my role as Manager of Organizational Learning at a global IT company. This project thus started in the upper right-hand side of Figure 1 that deals with processes of learning in the context of work from a practice point of view. Later, when it turned into a

PhD project, it moved to the left-hand side of the model. To me, the axes in the figure are not fences between different areas of the research field but rather signs that tell the hiker that he/she is moving from one landscape to another. This approach enables me to move around the quadrants' theoretical concepts exploring the landscape.

I will refer to the theoretical concepts of organizational learning provided by Yrjö Engeström (1996, 2001, 2011) and organizational knowledge creation provided by Nonaka and Takeuchi (1995), whose theoretical concepts include spirals as a metaphor for learning or knowledge creation. Because 'experience' is an important part of this PhD study, I draw on John Dewey's (1908, 1976) work in this regard. The context is the frame of the learning situation, the term and Ba (Krogh, Ichijo, & Nonaka, 2000) will come into play when studying the context of this global IT company.

1.2 LITERATURE REVIEW

In order to learn about the latest contributions to the research field, I carried out a literature review using Google Scholar as it presents the largest database for articles, including new articles, from various sources. The literature review may uncover a potential research gap in this area.

The first search term was 'learning from experience in the context of work', which yielded no results. The next search term was 'process for learning in the context of work', which also yielded no results. I then searched for 'organizational learning in high tech', which yielded three results, but none related to high-tech companies. The search term 'organizational knowledge creation in high tech' yielded one result. As the development of PR lasted for seven years, I searched for 'longitudinal study' on learning from experience in the context of work in high-tech companies, which yielded six articles. However, none related to global or big business.

Table 2. The results of the Google Scholar literature review, October 2014

Search criteria	**Google Scholar Number of titles**
'Learning from experience in the context of work'	0
'Process for learning in the context of work'	0
'Organizational learning in high tech'	3 , no big business included
'Organizational knowledge creation in high tech'	1
'Learning from experience' 'context of work' 'high tech' 'longitudinal study'	6, no big business included, no organizational learning included

The Google Scholar literature review did not come up with any longitudinal studies on organizational learning or learning from experience in the context of work when work takes place in a global IT company classified as big business. The literature review included no big business, and 'high tech' was perceived as information technology utilized to support learning and not as a description of the company producing high tech. Consequently, the articles did not present learning in the specific *context of work* being big business, global high-tech organizations. I used 'high tech' to broaden the scope, as IT is a part of high tech. The outcome of the literature review showed 'organizational learning' as the implementation of information technology, which is not what I am looking for as this PhD study focuses on organizational learning from a learning perspective (not from a technology perspective). Thus, this PhD study perceives learning in a broader sense. I will come back to the understanding of learning in Chapter 2.

The poor result of this literature review made me search a more specific database, ABI/INFORM, which features thousands of international full-text journals, dissertations, working papers and key business and economics periodicals that cover companies and business trends around the world (http://search.proquest.com.zorac.aub.aau.dk/). In this process, I looked at groupings of words in the abstracts. Table 3 shows the results of the literature review using ABI/INFORM.

Table 3. ABI/INFORM literature review, October 2014

The search focused on the words in article abstracts	**ABI/INFORM database Number of titles**
Organizational learning AND (high tech OR big business) AND (information technology or longitude studies) available in abstract	1, no big business included
Organizational learning OR learning organization AND (high tech OR big business) AND (longitude studies) available in abstract	3, none includes organizational learning
Knowledge management AND (high tech OR big business) AND (longitude studies) available in abstract	1, no big business included
Organizational knowledge AND (high tech OR big business) AND (longitude studies) available in abstract	0
Organizational knowledge creation AND (high tech OR big business) AND (longitude studies) available in abstract	0
Organizational knowledge and individual knowledge AND (high tech OR big business) AND (longitude studies) available in abstract	1, no big business included

ABI/INFORM presented no articles about big business and only one article about organizational learning. Even though three articles included learning organization, none included big business and longitude studies. The article about knowledge management did not touch upon organizational knowledge creation or big business, which are both included in this PhD study.

The Google Scholar and ABI/INFORM literature reviews uncovered a lack of longitude research on organizational learning/learning organization/knowledge creation/knowledge management in high tech companies classified as big business. Actually, Frankwick's (1991) article *Marketing strategy decision-making* from 1991 is the only abstract that included organizational learning AND (high tech or big business) AND (information technology OR a longitudinal study). In 1991, Frankwick published a study of a high tech company included in Fortune 500 (big business). He applied a psychological approach to learning, defining it as 'belief structures and changes to these beliefs over time' (Frankwick, 1991). He concludes that the managers' beliefs are closely connected to the formal organization and to the informal network in the organization.

The literature review uncovers a gap in the research about organizational learning in the IT industry, specifically on organizations classified as big business. I found no longitudinal studies in my literature review. Using the five articles found on ABI/INFORM, this PhD thesis is an attempt to fill a small bit of this gap.

The literature review did not provide much content, so in order to discuss current tendencies in the area of learning in the context of work I turned to scientists with a long history in this area who have published within the last two to three years on this matter. Below I briefly describe their latest contributions in alphabetic order after their surname.

Elkjaer and Mossfeldt Nickelsen (2014) point out the relevance of studying learning across knowledge hierarchies, which are often closely connected to the organizational hierarchy. They found that shared goals and the problem-solving ways of communication are important means for learning across teams in an organization (Nickelsen & Elkjaer, 2014).

Engeström et al. (2013) explain the theoretical concept of expansive learning, which was published more than two decades ago. They explain the importance of involving the employees in order to create 'truly new concepts and solutions' *(*Engeström, Rantavuori, & Kerosuo, 2013*).*

According to Gherardi (2012), studying learning in the context of work may take a practice-based approach, and the analytical framework may include three perspectives,

> 'a reading of practice "from outside" (as a patterned set of activities), a reading "from inside" (as knowing-in-practice) and a reading as a social practice (as a "doing" of society)' *(Gherardi, 2012, p. 3).*

1.3 THE CONTEXT OF THIS PHD STUDY

> *'An important aspect of organizational learning and knowledge sharing studies has been based on the idea that through knowledge sharing between individuals organizational learning will occur. However, clear explanation of the process is not available' (Abbariki, 2013 p. 45).*

This PhD thesis is an attempt at providing a clear explanation of how knowledge sharing between individuals may lead to organizational learning. As mentioned, this work began not as scientific research but as a task for me to solve in my role as Manager of Organizational Learning in a fast- growing global IT company classified as big business and situated in an expanding and highly competitive market. The top management asked me to develop and implement a process for learning from experience in the context of work in order to repeat successes and avoid reinventing the wheel or repeating mistakes when processes were repeated in other countries. The process of learning from

experience should improve products, services and work processes throughout the organization in order to make learning possible across divisions and across country borders.

The researched IT company is classified as big business as it appears on PwC's top 30 list of global companies. This global IT company delivers hardware, middleware and software to market leaders in banking, transportation, healthcare etc. that are business-to-business companies (Rao, 2003, p. 381). In 2011, the company had more than 380,000 customers in 145 countries serviced by more than 108,000 employees and had revenue of 36.7 billion US dollars over 12 months. That same year, the company's Europe, the Middle East and Africa (EMEA) division had approximately 25,000 employees in more than 60 countries. In 2005, the global IT company changed its growth strategy from organic growth to growth by acquisition. Over the next five years, more than 60 companies were merged into the global IT company, including a vast number of new employees. It became increasingly important to learn from experience. From 2005–2010, the global IT company changed from a multinational company with local organizational entities in more than 60 countries in EMEA to a global company where employees worked in divisions that ignored geographical boundaries, which increased the need for learning from experience across geographical and organizational borders.

My role was Manager of Organizational Learning (EMEA). I was responsible for three teams. First, the Organizational Learning team (EMEA) included three experts in IT and two experts in organizational development. In 2008, the IT experts were moved to another group and one person left the group. From 2008–2012, there were only two people dedicated to organizational learning in EMEA. Second, I managed the community of local Knowledge Managers in more than 40 countries in EMEA from 2006–2010. In the individual countries, the role of Knowledge Manager was in addition to the employee's everyday job, and most likely, s/he worked as an expert and did not hold a managerial role (Rao, 2003, p. 385). Third, I built up a community of trained PR facilitators called the PR community. The global IT company trained a small number of facilitators as a part of the pilot project in 2005. I trained 300–400 PR facilitators from more than 40 countries from 2005–2012. After the training course, the facilitators became members of the PR community of practice that had 175–200 active members from most of the countries in EMEA representing all divisions. They never met physically. I led the PR

community, and therefore I observed what was going on in all the web conferences from 2005–2012.

The global IT company focused by nature on IT, and the expectation was that I should follow this approach. Instead, I insisted on developing *processes* for learning from experience based on conversations between the people who shared experiences of a specific task or issue. I wanted employees at all levels to reflect individually as well as collaboratively in order to learn from common work experiences.

Initially, I had a time limit of two months to come up with a suggestion and preferably to run a pilot project, which became the foundation of the ongoing development of the educational design to learn from experience in the context of work. The pilot project included the educational design of After Action Reviews (AARs), which was changed according to the description in the first article *Proactive Reviews: Expanding personal experience to organizational learning.* After the pilot project, the educational design was called Proactive Review (PR), which consists of just seven open questions asked in a specific sequence. The design is very simple, but what is behind it is more complex. Throughout this study, I call PR an 'educational design', by which I mean *approaches with the intent of planning and refining learning in naturalistic settings (*my own definition, inspired by Barab & Squire, 2004). Barab and Squire explore and explain DBR that is developed for studying learning in the authentic setting, that is, the classroom

> '*with the intent of producing new theories, artifacts, and practices that account for and potentially impact learning and teaching in naturalistic settings'* (Barab & Squire, 2004, p. 2)

They do not intend developing a specific educational design, but they describe what to look for when studying learning, and these elements seem relevant when describing processes for learning planned by a teacher or equivalent professional. I will come back to DBR in Chapter three.

The project evolved slowly from being a task to solve in a global IT company to becoming something else during the process of writing a book about PR. The target audience of the book was the colleagues who attended the training course in the facilitation of PRs. I found myself enjoying the writing process, and when it was published I was encouraged to undertake PhD studies. The project

thus became a research topic when I decided to start this PhD study.

This study is based in practice, as the development of an educational design for learning from experience in the context of work was one of my tasks at the global IT company. It started as a 'doing in society' and became 'a part of the DNA' as a senior vice president put it, which I will interpret as 'knowing-in practice'. This PhD study makes the educational design 'a patterned set of activities' consisting of seven open questions that are to be asked in a specific sequence (Gherardi, 2012). The educational design should embrace the learners who were the employees at all hierarchical levels of the global IT company (Engeström et al., 2013; Nickelsen & Elkjaer, 2014), and the educational design should invite learning across divisions and include knowledge hierarchies (Nickelsen & Elkjaer, 2014). When more hierarchy levels are involved in the learning process, it becomes relevant to study different roles in the learning process, such as middle managers (Nonaka & Takeuchi, 1995). It also becomes relevant to look at the learning processes from more dimensions; here I will look into individual, team, organizational and inter-organizational learning (Engeström et al., 2013; Nonaka & Takeuchi, 1995).

The context of learning seems to have an impact on the learning processes. Therefore, it is relevant to describe this context. This PhD study explores the development of an educational design in a global IT company that is among the top 30 companies in the world, and this context frames what may be doable.

1.4 THE RESEARCH QUESTION

The development of PR was not linear from the beginning in 2005 to the end in 2012. Neither the design of the research nor the design of the PR was planned in detail before I started. New needs arose due to the growth and the development of the global IT company, which made me change the educational design accordingly. Thus, the development of PR has been a series of iterations (the word 'iteration' is borrowed from IT systems development and means that a design is run through and changed). This thesis has also been through some iterations, some related to the global IT company and some as a result of my growing curiosity during the PhD study itself. Table 4 gives an overview of the iterations.

Table 4. Iterations in the development of Proactive Review

Iteration	Initiator	Year	Included In this PhD Thesis	The article that includes this iteration
From AAR to PR	Top management	2005	x	1
Training facilitators	Manager org. learning	2005	x	2
PR community	Manager org. learning	2006		
Sponsor responsibilities	Manager org. learning	2007		
Management challenges	Top management	2008	x	1
PR application	Top manager	2008		
Online PR	Facilitators	2009	x	5
Online facilitator training	Manager org. learning	2009		
Online connection between sponsors and facilitators	Managers	2010		
PR triggers When to run PRs?	External Audit	2010		
PR recognition - stamp	Facilitators	2011		
Inter-organizational PR	Manager org. learning	2011		
PR light for sales	Sales manager	2012		
Dialogues as the foundation for PR	PhD student	2013	x	3
Organizational requirements for PR	PhD student	2013	x	4

In order to understand the huge move from having no formal procedures for learning outside training courses to begin learning from experience in the context of work, this PhD study explores the development of PR from the pilot project that was run in 2005 and the development of trained PR facilitators that began in 2006 to the development of the online PR in 2009. The last two iterations of the development of PR are brought to life during this PhD study; therefore, the results are not implemented in the global IT company.

I will now present the general research question, which is followed by five sub-questions that mirror the five articles discussed in this thesis.

The research question is:
What may we learn from seven years' development of an educational design for learning from experience in the context of work when work is situated in a global high-tech company classified as big business?

First, I explore the development of PR as it thrived in the global IT company from the pilot project that was based on AARs to the final educational design. The name Proactive Review was invented after new questions were added to the original educational design of the

After Action Review. The name presents a contradiction; to review entails looking back whereas proactive entails looking forward. PR requires reflections on the past in order to create the preferred present that may lead to the favoured future. PR encourages the participants to look back and reflect on their experiences and then forge ahead to solve problems from the past in a continuous move.

The development of PRs was based on feedback from the stakeholders, namely the participants in the PR, the facilitators that conducted the PRs, the middle managers who managed the results of the PRs and top management who had given me the task of developing a process for learning from experience. The first iteration of an educational design for learning from experience was initiated by top management, and a few years later they required more information from the PRs. This requirement led to another iteration of the PR. The first article includes the first and a later iteration and explores the question of

how to expand individual experience to organizational learning?

The first iteration is investigated in the article *Proactive Reviews: Expanding personal experience to organizational learning*.

From the beginning of the development of PR, it was clear that facilitators were needed to allow participants to explore more widely and to maintain a caring atmosphere. This is necessary according to von Krogh et al. (2000). Facilitation was a 'foreign' skill in the global IT company, so facilitators needed to be trained. This iteration was initiated by the Manager of Organizational Learning (me). The second iteration explores the question of

how to facilitate the learning process in PRs?

This iteration is investigated in the article *Proactive Reviews – Fra personlig viden til organisatorisk læring*.

PR is founded on conversations between the participants, but it turned out that these were not always fruitful. In fact, sometimes it was quite the opposite, and the PRs were devastating for some of the participants. These experiences made me consider the terms conversation and dialogue, and this PhD study enabled me to explore the terms and visualize what I would focus on if I was hired to implement PR in another company. The third iteration was

initiated by me in my role as a PhD student. It explores the question of

how to minimize obstacles to dialogues as they unfold in PRs?

The third iteration is investigated in the article *Prerequisites for dialogue as the basis for learning in the context of work*.

In the summer of 2013, I was invited to write a chapter in the book *Utilizing Evidence-Based Lessons Learned for Enhanced Organizational Innovation and Change.* This gave me an opportunity to think through how PR could be applied to the lessons learned, which is a well-known tool to learn from experience in IT projects. The focus changed from organizational learning to learning in teams, which made me include additional theoretical concepts. The fourth iteration was initiated by me in my role as a PhD student. It explores the question of

what the organizational requirements for PR are when applied to lessons learned?

This iteration is investigated in the chapter *Proactive Review*.

When the global IT company changed from a multinational company to a global organization in the period 2005–2010, the employees shifted from working locally to working across geographies. It then became necessary to run PRs online to save time and money that would be spent in traveling. The context of the PR changed from being a face-to-face meeting to being a technology-mediated meeting where the participants could not see each other, as the technology at that time did not allow videoconferencing for more than 2–3 different locations. The development of online PR was initiated by the facilitators. The fifth and final iteration in this PhD thesis explores the question of

what to consider when moving PRs from a face-to-face setting to an online setting?

The fifth iteration is investigated in the paper *Online Proactive Reviews*.

1.5 THE CONTENT OF THE PHD THESIS

First, I will briefly describe how I understand the term 'context' in chapter 2.1. I will then briefly present Dewey's (1976) approach to

experience in chapter 2.2, followed by a discussion of Nonaka and Takeuchi's (1995) theoretical concept of knowledge creation in companies, specifically the spiral of the SECI model in chapter 2.3, which leads to a discussion of the terms knowledge and knowing in chapter 2.4. Next, I will briefly present Engeström's theoretical concepts of a human activity system and the spiral of expansive learning in chapter 2.5. The three theoretical concepts utilize a spiral as a metaphor for their theories. I will discuss the theoretical concepts in chapter 2.6.

In chapter 3, I discuss and develop Desigb-Baased Research (DBR), which is the methodological foundation of this PhD study. Chapter 4 includes my reflections on the five iterations of the development of the educational design to learn from experience in the context of work based on the papers and articles discussed in this PhD thesis. Each of the five iterations ends with a conclusion that describes what can be learned from the iteration. Chapter 4 also includes a discussion of 'good science' based on the experiences in this study. Chapter 5 consists of a discussion of the contributions to the research field, including additional theories, methodological impacts and new practices. Chapter 6 consists of the conclusion. Finally, chapter 7 contains suggestions for further research in this field.

.

2 LEARNING FROM EXPERIENCE IN THE CONTEXT OF WORK

In this chapter, I will present and discuss the theoretical concepts I have used to explore and explain parts of the phenomenon 'learning in the context of work'. My intention is not to present the full theories but rather I want to select the parts of the theoretical concepts I found useful when setting up my research.

In order to approach the problem of how to learn from experience in the context of work, I need to clarify how I understand the term context. Being aware of important elements in the context could support the creation of beneficial contexts for learning.

Neither Engeström nor Nonaka and Takeuchi dwell on the term experience as the foundation for knowledge or learning in the context of work but a theoretical concept of experience must be explored as it is an important element in my research question. Thus, I need other sources in reaching an understanding of this term and will draw on Dewey's (1976) work in this regard.

Nonaka and Takeuchi (1995) claim that knowledge creation in organizations consists of four ontological dimensions—individual

knowledge creation, knowledge creation in teams, organizational knowledge creation and inter-organizational knowledge creation. They provide the SECI model as a theoretical concept for understanding knowledge creation in teams, upon which I will draw.

My point of departure for the development of PR was practice; therefore, Engeström's (1996) theoretical concept of a human activity system is useful for understanding what is at stake when employees are asked to learn in the context of work (Engeström, 1996). Furthermore, Engeström (2001) provides a spiral of expansive learning that describes the learning process.

2.1 THE ROLE OF CONTEXT

When learning from experience takes place in a specific organization, the organization defines the framework for learning. This framework is the context of the learning. The context may be defined by factors such as the physical surroundings, the historical background, the sociological aspects and Ba, which will be discussed shortly (Nonaka & Takeuchi, 1995; Engeström, 2001; Elkjaer, 2003; Gherardi, Nicolini, & Odella, 1998; von Krogh et al., 2000).

A physical context is needed for creating knowledge, according to Nonaka et al. (2000). *The physical* part includes the geography, the building and the tools. What and how to learn is influenced by the geography, that is, the country, the town or area that hosts the organization because different geographical places offer different options. The building frames how many people can meet, if it is possible to meet spontaneously or if it is possible to talk or to have a conversation in private. The tools define whether the communication may be oral or written, and they outline the possibilities of capturing and saving important parts of the conversations (Engeström et al., 2013; Wenger, 1998; Nonaka et al., 2000; Gherardi et al., 1998).

According to Gherardi et al. (1998), the context develops over time; thus, *the history* of the context is important for understanding the context itself. The history includes the development of the context and provides insights about what has happened, which may lead to an understanding of the present situation. It can thus be seen how history can influence what and how to learn in the organization (Engeström et al., 2013; Wenger, 1998; Nonaka et al., 2000; Gherardi et al., 1998).

Important social aspects of the context include organizational structure and power, division of labour, critical organizational competences, rules, channel of communication, language and time for learning purposes (Engeström et al., 2013; Wenger, 1998; Nonaka et al., 2000; Gherardi et al., 1998).

Power structures may be obstacles for cross-divisional collaboration if the top managers do not collaborate but try to keep the knowledge inside the division. If the top managers do not provide time for conversation or interaction, learning will be slowed down. If the employees are not used to interacting and talking to colleagues from other divisions and discussing contradictions, mistakes or even conflicts, there is little chance of resolution, and any learning from the experience may be lost (Nonaka & Takeuchi, 1995; Engeström et al., 2013; Elkjaer, 2003).

Interaction and conversation are the foundations for learning in the context of work (Engeström, 2001; Wenger, 1998; Nonaka & Takeuchi, 1995). A limitation affecting interaction and conversation for learning purposes could be the time dedicated for these purposes (Nonaka & Takeuchi, 1995). The interaction between the individuals in an organization follows rules that may be implicit like habits or norms, or the rules may be explicit like local regulations or agreements. Conversation and interaction are supported and maintained by communication channels that are dependent on the organizational structures as well as the rules. Both determine who is supposed or allowed to talk to whom in the context of work. Certain rules could prevent cross-divisional interaction, for example, security rules that state that employees from one division must be separated from employees from other divisions. Conversations are based on a common language shared by the participants (Elkjaer, 2003; Wenger, 1998). Consequently, language becomes an element of learning. In global organizations, language will often be defined by the headquarters (Nonaka & Takeuchi, 1995) so that the language of the headquarters becomes the common language in the organization. This means that many employees may work in a language different from their mother tongue. Thus, language may have implications of power in global companies.

Ba is a concept developed by Nonaka, von Krogh and Konno to explain that certain organizational requirements give rise to knowledge creation in the context of work. Ba is a Japanese word that roughly means ‘place’ (Nonaka et al., 2000).

'*Ba unifies the physical spaces, virtual spaces and mental spaces'* (von Krogh et al., 2000, p. 178) and is based in a specific time, namely here and now. Ba is constantly changing as the individual changes, and Ba itself changes. According to Nonaka et al. (2000) Ba provides the living place for knowledge sharing, knowledge creation and the utilization of knowledge through action and interaction. Ba enables participants to form a common understanding and a common language, which means that participants in Ba cannot be on-lookers; they are actively involved (Nonaka et al., 2000). Sometimes, Ba occurs spontaneously, and other times it is built in intentionally. According to Nonaka, Toyama and Konno (2000, p. 25), the prerequisites for Ba are autonomy, creative chaos, redundancy, variety, love, care, trust and commitment. Autonomy means that the individuals or the group set their tasks while bearing in mind that the tasks should fit the objectives of the division and/or the goal of the organization (Nonaka & Takeuchi, 1995). Creative chaos enables the participants to transcend existing boundaries to identify a problem and solve it. By doing so, the participants may be able to break down routines and habits and evolve new creative frameworks. These creative frameworks are not easily found, and it may be helpful for the participant to change perspective, which requires that the participant knows his/her point of departure, namely his/her role in the organization and in the team and how to move from this point of departure. Redundancy is helpful for this move. Redundancy means overlapping information, sometimes even an overload of information. Creative chaos and redundancy may bring about frustration and uncertainty, so it is important that the team is able to create a balance between order and chaos. Nonaka et al. (2000) call this balance 'variety'. In order to overcome contradictions, disagreements and uncertainty, the team needs to be founded on love, trust and care. Here, the manager plays an important role, as he/she would be responsible for creating a safe atmosphere (Nonaka et al., 2000).

2.2 LEARNING FROM EXPERIENCE

> *To 'learn from experience' is to make a backward and a forward connection between what we do to things and what we enjoy or suffer from in consequence. Under such conditions, doing becomes a trying, an experiment with the world to find out what it is like; the undergoing becomes instruction—the discovery of the connections between things (Dewey & Boydston, 1976, p. 147).*

According to Dewey, experience is obtained during our actions and interactions with the world, provided that we reflect upon what we try to do and what happens as a consequence (Dewey & Boydston, 1976, p. 151). He stresses that knowledge and action are intertwined and that knowledge influences future experience, as knowledge and experience are closely linked (Elkjaer & Simpson, 2011).

According to Dewey, gaining experience is based in activities ('what we do to things') and the experience involves emotions ('what we enjoy or suffer from').In his book *Middle works* (volume 9) from 1916 (Dewey & Boydston, 1976), Dewey refers to 'we' as the learners in the sense that all humans experience. And experience stems from experimenting with things. The starting point is a sense that something is wrong, which is an emotion that is followed by an urge to solve the problem. We 'experiment with the world' to find out what it takes to solve the problem; consequently, learning from experience involves an individual and the world. In order to clarify the problem, we explore and analyse it, which leads to the elaboration of tentative suggestions for solutions. These must be tried out in practice to be evaluated and refined. This flow of activities develops experience. We see that experience is created by the interaction between thinking and doing. Experience occurs when we connect our ways of acting with the consequences of these actions (Ibid, p. 152), and experience gives us an advantage when we solve problems (Ibid, p. 350).

> According to Elkjaer *'Experience is a transaction between individuals and environment in which both individual and the environment develop over time' (*2003, p. 488).

Therefore, experience is constantly under construction as the environment changes over time and individuals adapt previous experiences into new ones. Experiences are based in the past, utilized in the present and kept for use in the future (Dewey & Boydston, 1976). To learn from experience means experimenting with the world and reflecting on this experimentation.

Miettinen (2000) provides a spiral model showing Dewey's model of reflective thought and action, including the importance of experience for creating learning.

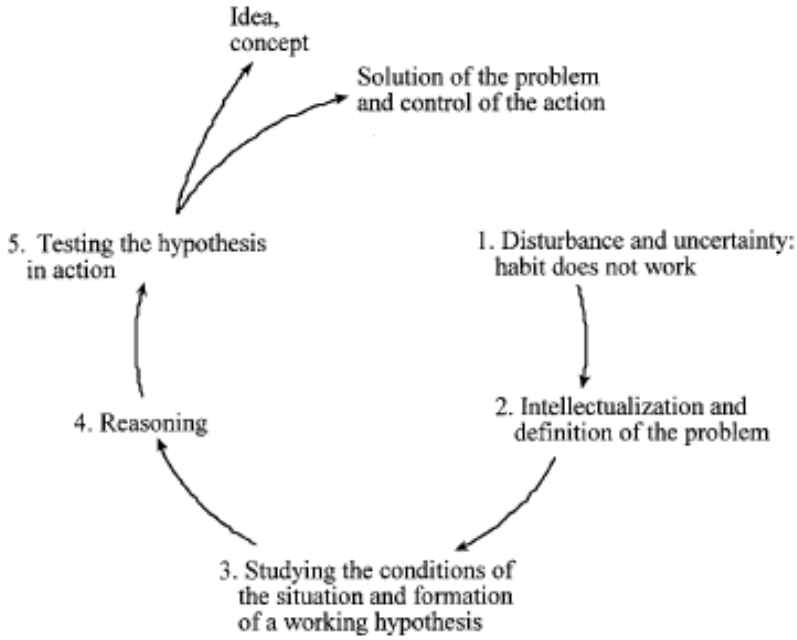

Figure 2. Dewey's reflective thought and action; model by Miettinen (2000, p. 65).

According to Dewey, 'thinking occurs when things are uncertain or doubtful or problematic' (Dewey & Boydston, 1976, p. 155). The starting point of thinking, or phase one, is a disturbance or an uncertainty that leads to inquiry about what is wrong and what needs to be solved. Phase two is defining the problem, which is crucial because it determines what data are relevant and what concepts should be taken into consideration (Miettinen, 2000, p. 66). Phase three includes analysis and diagnoses that uncover the material and social conditions and the resources available for solving the problem. In this third phase, a working hypothesis is created; 'working' means that it is tentative (Miettinen, 2000, p. 66). Phase four is reasoning, which consists of thinking experiments. It is an iterative process where the learner may go back and forth between the problem definition, the conditions and the working hypothesis and change them according to the new understanding they get due to the reasoning process. The result of the reasoning process is suggestions for solving the problem or overcoming the disturbance (Miettinen, 2000, p. 67). Phase five is

testing the hypothesis or solution in real life in order to find out if it works; this is the only way to know if the hypothesis is valid. If it works, the context may change. The reflective thoughts imply two kinds of results. First, the initial disturbance is overcome and the learner has restored control over the situation. Second, the learner has created new meaning of the situation, and s/he may utilize this new meaning in other situations in the future (Miettinen, 2000, p. 67). The spiral outlines alternative futures to change the present situation, and the process involves experiences, thinking and emotions.

2.2.1 DISCUSSING LEARNING FROM EXPERIENCE

According to Dewey (1976), knowledge is created on the basis of inquiry; therefore, knowledge cannot be transferred from one person to another. To learn from experience implies that nobody but the learner should provide answers regarding the uncertainty or disturbance prompts the thinking process.

Dewey (1976) uses the word 'we' in his texts, which implies that he embraces everybody in his theoretical concepts. He does not attempt to look at learning from 'outside' in the meaning of 'them – the learners'. Quite the opposite is true, as he sees learning from the learner's perspective. Dewey (1976) emphasizes that 'we experiment with the world' to find out 'what it is like', which means that the aim of learning is to become aware of realities. And when Dewey (1976) stresses the importance of 'what we do to things' and 'what we enjoy or suffer from', he seems to be saying that the learner influences the realities.

Dewey (1908) positions himself in pragmatism, which implies that knowing is always tentative and evolves over time. There is no such a thing as absolute certainty (Quinton, 2011), and knowing cannot be passively received because knowing is action and inquiry leads to the development of knowing and experience. Inquiry involves mental and bodily interaction with the world (Dewey & Boydston, 1976). The starting point for inquiry is perplexity, confusion or doubt that leads to the development of knowing and experience (Dewey & Boydston, 1976, p. 157), which are founded in a historical and social context.

To sum up, Dewey describes the starting point of thinking as a problem, a disturbance or an uncertainty. Experience is gained through inquiry and experimentation with the world, followed up by reflections on this experimentation. Reflective thoughts lead to new meaning and control over the situation, which I call the 'preferred present'. This new meaning may be utilized in other

situations, which I call the 'favoured future'. Experience includes reflective thoughts as well as emotions.

2.3 KNOWLEDGE CREATION

According to Nonaka and Takeuchi, organizational knowledge creation is

> *'the capability of a company as a whole to create new knowledge, disseminate it throughout the organization, and embody it in products, services and systems'* (Nonaka & Takeuchi, 1995, p. 3).

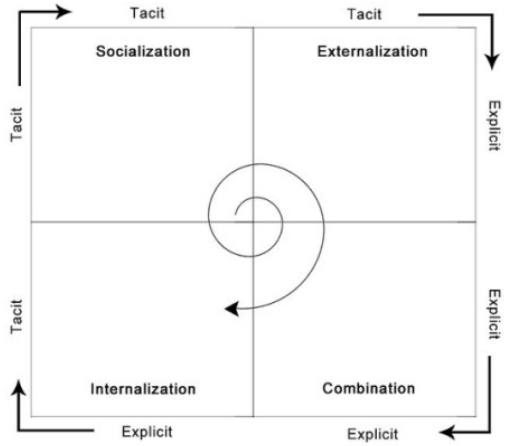

Figure 3. The SECI- model (Nonaka &Takeuchi, 1995, p. 71).

Nonaka and Takeuchi (1995) define knowledge as 'justified true belief' and explain that this definition is based on empirical observations and logic considerations. The five senses are the instruments for empirical observation, whereas concepts and laws are the foundation for logic inference. Justified true belief is linked to the positivist branch of the philosophy of science. Even though Nonaka and Takeuchi (1995) refer to justified true belief as the definition of knowledge, they also criticize this definition. They find this definition absolute, static and non-human and suggest that relative, dynamic and humanistic dimensions of knowledge be added to the description of knowledge. Therefore, they extend the definition to be

> *'a dynamic human process of justifying personal belief toward the 'truth''* (Nonaka &Takeuchi, 1995, p. 58).

Nonaka and Takeuchi (1995) describe the starting point of the creation of knowledge as the need to acquire work-related knowledge. The knowledge creation process is a spiral that begins with an employee who acquires tacit knowledge by socialising with colleagues, looking at what they are doing and how they do it and trying to do same. By doing this, the employee may construct technical skills and mental models. The starting point of the knowledge spiral is called socialization. Colleagues try to create a common understanding (meaning) through dialogue and collective reflection, which is called externalization. The next phase in the knowledge creation spiral is called combination, which is when a person combines different kinds of explicit knowledge and discovers new structures, gaps or insights. Over time, the new knowledge may be internalized, which means that the person 'just knows it' without consciously thinking about it. The explicit knowledge has become tacit (Nonaka & Takeuchi, 1995, p. 71). The key action in the knowledge creation process is 'knowledge conversions' that change tacit to explicit knowledge. Knowledge conversions enable colleagues to create meaning by involving experiences, feelings, activities and ideas (Nonaka & Takeuchi, 1995; Nonaka et al., 2000). This spiral model is called the SECI model as it contains socialization (S), externalization (E), combination (C) and internalization (I). Nonaka and Takeuchi (1995) recommend that the organization should

> '*exploit, accumulate, share and create new knowledge continuously and repeatedly in a dynamic and spiral process'* (Ibid., p. 162).

Nonaka and Takeuchi (1995) use the term 'knowledge creation' and claim that *'learning represents only one of the interactions in the knowledge-creation framework'* (Ibid., p. 239), namely when we turn explicit knowledge into tacit knowledge, or internalization; the other three modes in the SECI model are heavily based on '*acquiring knowledge from pure or direct experience*' (Ibid., p. 239). Knowledge creation in the context of work is perceived as a horizontal process as individuals involve colleagues in order to continue innovation and improve the competitive advantage (Ibid., p. 6). The key driver to create knowledge in the context of work is changing tacit knowledge into explicit knowledge. The examples in the book and the fact that peers create knowledge together shows that Nonaka and Takeuchi perceive knowledge creation as being dependent on the context.

According to Nonaka and Takeuchi (1995), knowledge creation occurs in different ontological dimensions—the individual

employee, a team, the organization and knowledge creation may also take place between organizations (Ibid., p. 57). They claim that all employees within an organization can contribute to knowledge creation (Ibid., p. 162). The subjects for knowledge creation are the individual employees (Ibid., p. 72).

The individual and the team create knowledge in collaboration. According to Nonaka and Takeuchi (1995), the construction of knowledge means that the individual or the group creates meaning by involving experiences, feelings, activities and ideas. Knowledge develops through engagement with an activity and is embodied in individuals and groups.

The organization creates knowledge when more groups interact or when employees from more departments or divisions interact, and members from different teams externalize tacit knowledge. This exchange of knowledge leads to the combination of knowledge across organizational boundaries; thus, new knowledge is developed.

Inter-organizational knowledge creation occurs when employees from an organization interact with colleagues from another organization. For example, by developing a new service together, the involved employees create new knowledge through exchanging explicit and tacit knowledge. This new knowledge may be shared within the employees' organizations, resulting in inter-organizational knowledge creation (Ibid., p. 73).

The organization puts effort into knowledge creation because knowledge has become an important resource, and the process of knowledge creation is the way to access this resource. The new knowledge is intended to improve products, services and systems in order to maintain or enhance competitive advantages (Nonaka & Takeuchi, 1995, p. 240).

Nonaka and Takeuchi suggest that middle managers initiate knowledge creation because they have the most insight into what the organization needs. The middle managers are the link between the strategy given by top management and the employees doing their everyday jobs (Ibid., p. 128). However, their examples contradict this point of view as they show the initiative for knowledge creation came from the highest level of the organization (Ibid., pp. 100–107).

2.3.1 DISCUSSING KNOWLEDGE CREATION

Nonaka and Takeuchi (1995) changed the original definition of knowledge from *'justified true belief'* to *'a dynamic human process of justifying personal belief toward the "truth"' (*p. 58*).*

It seems that they do not see the 'truth' as something fixed as 'dynamic human processes' indicates that knowledge is not a stable commodity but rather a process. At the same time, they stick to the positivistic basis of knowledge as 'justified true belief' and distance themselves from this definition. I wonder why Nonaka and Takeuchi do not stick to 'justified true belief' as the point of departure but briefly change the positivistic definition of knowledge.

In order to embody the new knowledge in products, services and systems, employees need to make changes in their cognition and/or in their behaviour, and the changes need to fit into the organization (Nonaka & Takeuchi, 1995). This point of view is supported by Vera and Crossan (2003), who suggest that new knowledge may be situated in services or systems. It seems like Nonaka & Takeuchi (1995) move from an understanding of knowledge as 'justified true belief' to an understanding where knowledge may be embedded in physical things (products) or behaviours (services and systems). When employees change behaviour, knowledge becomes a process rather than a commodity, as it is in 'justified true belief' (Gherardi et al., 2007). Furthermore, the changes need to fit into the organization, which implies that the context has an impact on the knowledge.

Nonaka and Takeuchi (1995) offer a rather vague explanation of how to spread the learning from the individual and team to the organization or between organizations. According to them, learning spreads when employees talk to colleagues from other teams, but a specific way of making this happen does not seem to be provided.

Engeström (2001) points out that Nonaka and Takeuchi perceive knowledge creation in the context of work as a management decision and not something that is initiated and maintained locally. He claims that Nonaka and Takeuchi do not dig into the internal disagreements or contradictions that may initiate learning in the first place.

I am very inspired by the SECI model because it emphasizes the importance of experience as a resource for knowledge creation and because I find the metaphor of a spiral for organizational knowledge creation useful. Furthermore, the SECI model presents the view that knowledge is something people create; Nonaka and Takeuchi claim that the main driver is dialogue, which means that the employees need to interact in order to create knowledge. Therefore, knowledge is both a process and a practical activity leading to knowing how to get things done (Gherardi in Easterby-Smith & Lyles, 2011, p. 47).

2.4 DISCUSSING KNOWLEDGE AND KNOWING

Here, it is relevant to ask 'What is knowledge?' and 'How can knowledge be obtained and how can knowledge claims be justified?'

Dewey and Boydston state that

> *'Knowledge is not just something which we are now conscious of, but consists of the dispositions to consciousness with a view of straightening out a perplexity, by conceiving the connection between ourselves and the world in which we live'* (1976, p. 354).

According to Dewey, knowledge is dependent on the context, that is, a given situation, and knowledge is embedded in an object. Instead of 'justified true belief', knowledge is a perception, and Dewey repeats that knowledge cannot be something complete, as it develops all the time in order to give meaning to what is going on (Ibid., p. 351). He explains that knowledge is an activity that 'actively produced certain physical changes in things' (Ibid., p. 348). Taking this statement for granted, knowledge may be justified in improved products and services and new ways of organizing work, which may be called new work practices.

According to Nonaka and Takeuchi (1995), knowledge is

> *'a dynamic human process of justifying personal belief toward the "truth"'* (Nonaka &Takeuchi, 1995, p. 58).

I question the consistency of this definition. On the one hand, Nonaka and Takeuchi claim that knowledge is 'justified true belief', which indicates that knowledge is constant, but on the other hand they explain that knowledge is dynamic. This would seem to be a contradiction. I wonder how 'justified' a belief needs to be and to what extent something can be justified. Also, truth is rather relative to me, and I am backed up by Dewey, who says that knowledge is far from 'justified true belief' because '*truth is simply a working hypothesis and method*' (Dewey, 1908, p. 92). He explains that truth is the ascertained meaning of an object or an

idea (Ibid., p. 89). For Dewey, truth is not valuable per se but is valuable when 'it leads to desirable consequences' (Ibid., p. 93). Dewey attacked the whole idea of truth as 'justified true belief' and replaces it with deliberate experimental interactions with the world (Quinton, 2011).

According to Nonaka and Takeuchi, employees create knowledge by participating in dialogues, which makes knowledge both a process and a practical activity leading to knowing how to get things done.

Investigating the term 'knowledge' I realize it is something people do together; knowledge is neither fixed nor stable. My perception is that knowledge is not a commodity but a practical activity that merges knowing and doing.

> *'The symbolic translation from the term "knowledge" to that of "knowing" has opened the way for a view of knowledge as first a process and subsequently as a practical activity'* (Gherardi in Easterby-Smith et al., 2011, p. 59).

Knowing embraces experience and practice, and it is based on learning activities. Knowing is not given to us but is collaboratively created by interacting with the world. Knowing may be justified by being embedded in objects, such as improved products, services or work processes. Consequently, knowing is not only cognitive but is also embedded in objects or work processes in everyday practice. Drawing on Shipton and DeFillippi (2011), *knowledge* is an embedded capability, whereas *knowing* is a process of negotiation between individuals and is grounded in everyday practices. Knowing is to understand what is required to perform, and experiences come into play as experience is a cornerstone for creating practices well (Shipton & DeFillippi in Easterby-Smith et al., 2011).

Pascale Pagliardi has inspired me to see knowledge and knowing from two perspectives using two metaphors (Gherardi, 2000, p. 213). Is knowledge a house or a garden? Using a house as a metaphor for *knowledge*, a house is planned and structured by an architect. It has a specific structure that will not change unless the architect plans and controls the changes. When built, the house is stable and will not provide surprises. Using a garden as a metaphor for *knowing*, it is given that a garden grows whether planned or not. If planned, it needs to be nurtured to stick to the plan; otherwise it will change on its own. A garden develops all the time; new plants sprout spontaneously while others do not survive. A garden is unstable and full of surprises.

'*Knowledge is cognitive, including facts and capabilities, while knowing is behavioural, also called knowledge in action'*, according to Vera & Crossan (2003, p. 3).

2.4.1 CONCLUSIONS ON KNOWLEDGE AND KNOWING

Both knowledge and knowing are important terms for understanding learning in the context of work because they mirror different perspectives. In the global IT company, 'knowledge' was accepted as a capacity or skill, and people with deep insight into specific IT matters were highly esteemed as 'gurus'. There was an ongoing discussion about how the knowledge of the gurus' could be captured and kept, preferably online. I argued this was not an option because the gurus' knowledge was not to be transferred; instead, we needed processes that enabled colleagues to construct knowledge together with the gurus. Today, I realize that I went into a combat of understanding knowledge as a commodity and knowing as a process.

The development of PR is built on both knowledge and knowing. Knowledge is the theoretical concepts and methods I applied to create the educational design. Knowing is the ongoing development of my insights about the theoretical concepts, methodology and methods, development of the educational design and my personal development from being a Manager of Organizational Learning to being an organizational learning nerd.

During this PhD study, I have been increasingly inspired by the term knowing because it implies that

- Knowing is dependent on the context in which it is created.
- Knowing is constructed by individuals and teams when they interact with each other and the world.
- Knowing may be obtained by following metaphoric learning spirals.
- Knowing is an activity.
- Knowing may be a competence and/or physical changes in things.
- Knowing includes experience and is grounded in everyday practices.

2.5 EXPANSIVE LEARNING

The theory of expansive learning describes learning in the context of work (Engeström, 1996). Engeström (2001) claims that learning in the context of work is rarely a well-defined process controlled by

an expert. Typically, neither the employees nor their managers know what is to be learned as the objective of individual learning is not clearly defined; thus, employees are often not conscious of attending a learning process. They make the effort to learn in order to participate in *'culturally valued collaborative practices in which something useful is produced' (*Engeström, 2001, p. 141). They solve work-related problems and by doing so, they learn. The learning process is initiated by a contradiction or by questioning the existing practice. According to Engeström (2001), the key actions for learning in the context of work include questioning, analysing, reflecting on and evaluating the process of learning. The foundation of these actions is conversation (Engeström et al., 2013). The history of the activity system determines the problems, contradictions and conflicts that are the point of departure of the

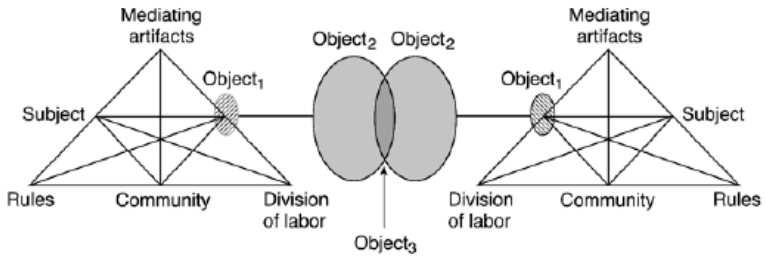

Figure 4. Two interacting activity systems (Engeström, 2001, p. 136)

learning processes within the activity system. As history is an important part of the context, learning is founded in this context (Engeström, 2001, p. 136).

An organization may be perceived as an activity system and framed as a subject that strives to achieve an object (Cole & Engeström, 1993; Engeström, 2001). The activity system shows how six different elements influence each other, and indicates that the six elements are dependent of each other. For example the subject is influenced not only by the object it wants to achieve, but also by rules and regulations from inside and outside the organization (the activity system) and the community to which it belongs. The subject is also influenced by the division of labour in the specific context and by the tools (mediating artefacts) available to achieve the object (Engeström, 2001, p. 136).

An activity system may be individuals, a team, an organization or collaborating organizations that learn (Engeström, 2001, p. 136). The need for learning may be explicitly formulated or may

manifest as an implicit contradiction between new objects and the available tools or rules. Tensions may occur over time when new ideas or requirements clash with the way the employees use to do things. The tensions may lead to conflict between the old and the new (Engeström et al., 2013, p. 85). Engeström claims that such conflicts should be welcomed as they are the starting points for new inventions and changes, even though they often imply disturbances and conflicts.

Engeström makes use of this model to understand what is at stake when employees learn in the context of work. He does not break the model down into different ontological dimensions. To look at the model from various ontological dimensions is my way of utilizing the model.

Looking at one of the triangles in Figure 4, the *individual employee or a team* works to achieve the object by utilizing the tool available while he/she/they submit to the division of labour and the rules defined by the organization (community).

Elsewhere in the same figure, *learning across teams or divisions* is illustrated as two interacting activity systems sharing parts of an object. Each team adheres to the rules and the division of labour defined by their community/team and they utilize the mediating artefacts available to them. Even though both teams and divisions have to align with the overall rules and division of labour defined by the organization, they may still submit to the local rules, division of labour and the tools defined by their local team or division (Engeström, 2001). The different mediating artefacts, rules and division of labour may cause tension between the teams.

Inter-organizational learning may be perceived as two interacting activity systems, also illustrated in Figure 4. The two organizations strive for a common object, and each organization has its own mediating artefacts, its own rules and division of labour (Engeström, 2001). The community, or organization, is defined by its history, physical surroundings and sociological aspects such as power, language and channels of communication.

2.5.1 THE SPIRAL OF EXPANSIVE LEARNING

Engeström presents a spiral as a metaphor for the learning process and calls it 'the spiral of expansive learning' (Engeström et al., 2013). This is a process

> '*in which the practitioners acquire a new way of working while designing and implementing the new practices themselves'* (Cole & Engeström, 1993, p. 30).

The expansive learning process is initiated by questioning the existing practices in order to uncover internal conflicts or contradictions. A contradiction is different from a conflict or a problem because

> *'contradictions are historically accumulated structural tensions within and between activity systems'* (Engeström, 2001, p. 137).

Conflicts or contradictions are to be examined from a historical point of view, taking the historical development of the team/organization/trade into consideration, using empirical analysis.

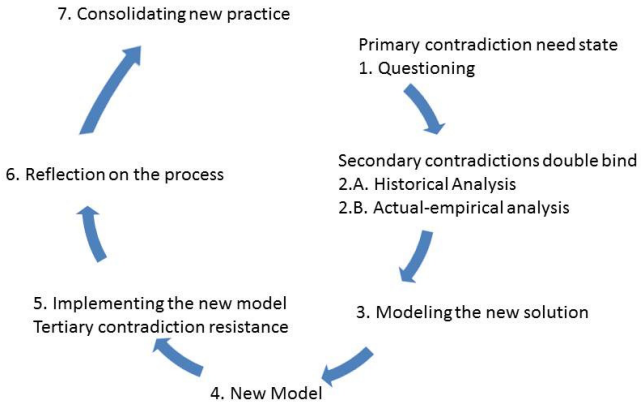

Figure 5. The spiral of expansive learning (Engeström, 2001, p. 152)

The learning process is collaborative, and the key actions are questioning, analysing, modelling, examining the model, implementing, reflecting on and evaluating the process of learning, consolidating and generalizing the outcomes (Engeström, 2001, 2013).

The cycle starts over when the new model prompts questions or uncovers contradictions (Engeström et al., 2013).

> '*Expansive learning proceeds in cycles or spirals through multiple phases and over lengthy periods of time'* (Engeström, 1996, p. 135).

The learning process may be initiated by top management who invites the 'Change Laboratory' to facilitate a transformation from

the present situation of major contradictions to the implementation of a new model (Engeström et al., 2013, p. 95). The 'Change Laboratory' is a crew of researchers led by Engeström. Alternatively, the learning process may be initiated by the employees when they realise that contradictions force a change (Engeström, 2001, p. 135).

The individual employee learns in order to do their job, and what they learn is a function of the work. An employee learns in order to participate in *'culturally valued collaborative practices in which something useful is produced' (*Engeström, 2001, p.141). Peers learn from each other. Normally, employees do not have a defined learning objective, a plan or specific support for the learning processes (Engeström, 2001). In contrast to learning in schools, it is rare that somebody who knows the answers is involved. The key action for learning is conversations with peers (Engeström et al., 2013). Learning is prompted by contradictions or questioning the existing practice (Engeström, 2001). As learning is an integrated part of problem solving, the solutions are often neither right nor wrong but rather better or worse (Engeström, 2001).

The team learns in order to produce something useful. The key action is conversation because the point of departure for the learning process is a contradiction between 'what is' and 'what is wanted' or questioning about existing practice. Both may be raised by employees at any level within the organizational hierarchy (Engeström, 2001, p. 151). The team may start the learning spiral by questioning aspects of existing practices, followed by an analysis of the present situation and its historical basis. Based on the analysis, the team constructs solutions or models that are then examined and refined before being implemented in the organization. The examination and re-development may consist of several iterations, and the implementation may result in resistance by colleagues or managers. When the new model or practice is implemented, the creators take time to reflect on the process (Engeström, 2001).

The organization learns when more teams or team members collaborate across organizational borders (Engeström, 2001, p. 140). The organization learns in order to embrace and survive the multiple points of views, traditions and interests that are always present at the same time. The key actions for learning are conversations between individuals from different divisions that lead

to an analysis of the contradiction. This will in turn bring about suggestions for solutions (Engeström, 2001, p. 153).

Engeström stresses that the exchange of information, trust and collaborative problem solving is important to enable learning in the context of work (Engeström, 2007, p. 337). It seems like expansive learning takes relationships and social interactions into account when employees learn in the context of work. The outcome of the expansive learning process may be *'new collective work practices including practices of thinking and discourse'* (Engeström & Kerosuo, 2007, p. 339).

2.5.2 DISCUSSING EXPANSIVE LEARNING

Engeström's activity theory seems to be based on the assumption that knowing evolves through negotiation within the groups he supervises himself (Phillips, 1995, p. 5). Negotiation and practical experimentation is the foundation for learning that leads to new practices (Engeström et al., 2013, p. 85). The starting point of the learning spiral is a conflict, a contradiction or questioning; thus, Engeström does not tell the organization what to develop or learn. Instead, he facilitates learning processes within the organization. The starting point (the conflict, the contradiction or questioning) is defined by the employees in the organization, whether they be ordinary employee, middle managers or top managers. What is to be learned is founded on historical and social processes, and knowing is based on the social and cultural context (Fuglsang & Olsen, 2004, p. 349).

The expansive learning theory is based on Vygotsky's model of the mediated act (Engeström, 2001, p. 134). Regarding learning, Engeström refers to Vygotsky's Zone of Proximal Development and Bateson's learning classes. Regarding the philosophy of science, it seems like Engeström is heavily influenced by the Marxist tradition because he stresses historicity, builds on the central role of contradictions and uses the term 'division of labour'. In his article about the Finnish baseball team, he states that

> *'a primary contradiction between the excitement of the competition (use value) and potential monetary profit (exchange value) has existed for a long time'* (Engeström, 2000, p. 306),

which is Marxist terminology. On the other hand, he seems to acknowledge human will, consciousness and intentions as key drivers of expansive learning. This point of view contradicts with Marxist thinking, according to Fuglsang and Olsen (2004, p. 360). Engeström may place himself in a position of social constructivism

as he advocates for dynamic social processes rather than fixed structures as the bases for analyses. He describes how a subject realizes the existence of an object that becomes a 'cultural entity' (Engeström, 2001, p. 134) and states that learning is founded on historical and social processes while knowing is based on the social and cultural context (Fuglsang & Olsen, 2004, p. 349).

2.6 CONCLUSIONS ON THEORETICAL CONCEPTS FOR LEARNING FROM EXPERIENCE IN THE CONTEXT OF WORK

> *'Learning is* coming *to know',* according to Dewey (1916 (1976), p. 340). Gherardi expands this point of view by stating that '*learning is a process in which you move into unknown territory, face mysteries and solve them'* (Gherardi, 1999 in Elkjaer, 2003).

A spiral is a metaphor for thinking, knowledge creation or learning for Dewey/Miettinen (2000), Nonaka and Takeuchi (1995) and Engeström (1996, 2001, 2007, 2013). The spiral works in a context that is defined by the physical surroundings, the historical background, sociological aspects and Ba. Learning from experience in the context of work includes contradictions or disagreements that may have a negative influence on Ba (Nonaka & Takeuchi, p. 199; Engeström, 2001). Therefore, it may be beneficial to have a facilitator to maintain Ba during the problem-solving process.

According to Dewey (1976, p. 155), the starting point of thinking is disturbance or uncertainty, Nonaka and Takeuchi (1995) mention the need to acquire work-related knowledge and Engeström points out that conflicts, historical-based contradictions or questioning practices prompt the learning process, which may be initiated by employees at any hierarchical level. Nonaka and Takeuchi (1995) suggest that knowledge creation in organizations is initiated by middle managers and top management. I wonder which hierarchical levels in the organization may initiate the learning spiral and if the spiral can only be initiated based on negative experiences. I will try to present PRs initiated by positive experience.

The subjects of learning in the context of work are all employees (Nonaka & Takeuchi, 1995; Engeström, 2001; Engeström et al., 2013).

> *'Learners are social beings that construct their understanding and learn from participation in practice within a specific socio-cultural setting of an organization'* (Elkjaer, 2003, p. 29).

Different hierarchical levels have different obligations in this regard. I will come back to the roles of ordinary employees, middle managers and top management in chapter 4.

The employees make the effort to learn in order to be skilled practitioners acknowledged by their colleagues, and they want to participate in

> '*culturally valued collaborative practices in which something useful is produced' (*Engeström, 2001, p. 141).

A part of being a skilled practitioner is to be able to solve relevant problems like improving products, services or work practices. Learning in the context of work is necessary to enhance competitive advantages (Nonaka & Takeuchi, 1995; Elkjaer, 2003).

Conversation is the key driver for creating experience (Dewey & Boydston, 1976), knowledge creation (Nonaka & Takeuchi, 1995) and learning in the context of work (Engeström, 2001, 2013).

> *'Still, no studies specifically examine conversations in business settings as a part of an enabling context or Ba for knowledge creation'* (von Krogh et al., 2000, p. 127).

This PhD thesis addresses this issue.

The results of learning from experience in the context of work may be

> *'a new way of working while employees design and implement the new practices themselves'* (Cole & Engeström, 1993, p. 30),

or the results may be improved products and services (Nonaka & Takeuchi, 1995; Elkjaer, 2003).

The different spirals do not explain a process for spreading new experience to relevant colleagues, and a process is missing for making top management aware of problems that cannot be solved by the team that has discovered them. Those processes will be included in my proposal for an educational design for learning in the context of work that is founded on the theoretical concepts described above and that is studied through the lens of DBR.

Nonaka and Takeuchi (1995) describe four ontological dimensions for knowledge creation in organizations—the individual employee,

the team, the organization as such and knowledge creation between organizations. Engeström also refers to these ontological dimensions. Gherardi (2001, p. 130) questions if it is possible to divide learning processes this way. From my point of view, the employee is simultaneously an individual, a participant in a team and a member of the organization. In other words, the three ontological dimensions are completely interwoven. Consequently, I do not see the three areas as strictly divided, but rather the ontological dimensions are a way to describe different approaches to learning in an organization.

The different spirals discussed in this chapter may have different ontological dimensions. Dewey's (1976) learning spiral is based on individual learning initiated by a disturbance. Dewey focuses on the interactions between the individual and the world, but he is not specific regarding interactions between the individual and other individuals. Nonaka and Takeuchi's SECI model (1995) mirrors individual and team learning, and they describe how the individual may change tacit knowledge into explicit knowledge by externalizing thoughts and ideas for colleagues. However, Nonaka and Takeuchi are vague in the description of how new ideas and knowing are spread to a wider audience within the organization, even though they utilize the SECI model to explain the move from individual to team, from team to organizational and from organizational to inter-organizational knowledge creation (Nonaka & Takeuchi, 1995, p. 71). Engeström's (2001) model of expansive learning includes individuals, teams and organizations. What is still missing is an educational design for initiating and maintaining the learning from one ontological dimension to the next, which is the expansion from individual learning to team learning, and from team learning to organizational learning and from organizational learning to individual learning in order to comply with the learning spiral. This will be discussed in more detail in chapter four.

2.6.1 THE IMPACT OF THE THEORETICAL CONCEPTS ON MY EDUCATIONAL DESIGN

The aim of learning from experience in the context of work is to enable employees to contribute to the development of improved products, services or work practices (Nonaka & Takeuchi,1995) or more generally, to participate in *'culturally valued collaborative practices in which something useful is produced' (*Engeström, 2001, p. 141).

In my view, a spiral is a metaphor for learning, and it shows that knowing evolves over time. The starting point may be confusion or doubt, but as mentioned earlier, I would make the starting point of the spiral positive experience. The educational design should enable the participants to explore historical and sociological aspects of the problem they are going to solve. Employees at all levels should be allowed to initiate a learning process. The subjects of learning in the global IT company should be all employees, no matter their position in the organizational hierarchy. The key action for learning is conversation, and facilitators should be provided in order to maintain the physical surroundings, social aspects and Ba throughout the learning process. The outcome of the learning process should be improved products, services or work practices.

The next step is to identify the methodology that embraces my needs when exploring the development of PR in the global IT company over a period of seven years.

.

3 METHODOLOGY DESIGN-BASED RESEARCH

In this chapter, I will consider what 'good' science means. I will also identify, present and discuss a methodology for exploring learning in the context of work, leading to the presentation of the research design for this study. Finally, I will discuss my mixed role as Manager of Organizational Learning, teacher, facilitator and researcher, as this may have influenced the research design and the quality of the study.

3.1 REQUIREMENTS FOR 'GOOD' SCIENCE

This study is based on real data from a real global IT company, and I strive to be clear in what I do and what I find. My intention is to contribute to the understanding of learning from experience in the context of work, and I hope these contributions may be useful at the very least to practitioners and scientists within the field. I hope I can add to what already exists. My contributions are relative in the sense that science is relative (Kjørup, 2014, p. 116). Kjørup (2014) refers to Comte, who explained the following requirements for 'good science': 1) study the real instead of the imaginary, 2) be clear instead of vague or unclear, 3) science should support mankind and 4) science should build up instead of tearing down. Even though these requirements were presented in the period 1830–1842, they are still broadly accepted in many research fields.

Inspired by Dewey, Nonaka and Takeuchi and Engeström, I understand that more requirements should be met when delivering 'good' science relating to learning from experience in the context of work.

Learning from experience starts with the perspective of the learner. Learning is perceived as being dependent on the socio-cultural contexts. Knowing is constructed in collaboration with peers, and conversation is the means of learning. Learning from experience in the context of work implies that the employees become aware of the realities, and my proposal for an educational design should aim for making employees influence these realities. A facilitator, who conducts the move within the spiral, is not supposed to know the content of learning or suggest solutions to the problems the employees identify (Adams, 2006).

This study took place in an authentic learning environment with all its messiness. I tried to stick to 'the real instead of the imaginary' (Kjørup, 2014). Research objects are changing and ambiguous (Justesen & Mik-Meyer, 2010, p. 39); therefore, validation could be a suitable requirement for 'good' science (Brinkmann & Tanggaard, 2010, p. 490).

Validation means the researcher must ensure the observations mirror the phenomenon she intends to study. She designs the research carefully, including the place, the actors, the actions to research, the time to spend in the field, the way to build relationships with the people to be studied, her role as researcher and the ethical considerations. She may combine the findings with relevant theory. Additionally, validation includes considerations about learning from observations and the discussions of the findings (Pedersen et al., 2012, p. 210).

In order to provide trustworthy results, I present various methods and data types. Most of the data is qualitative, but quantitative data are also included. The global IT company could provide lots of quantitative data, but as I am interested in the processes of learning—including the experiences, thoughts and emotions of those involved in PRs—qualitative data are more suitable.

According to Valsiner and Rudolph (2012), the research of developmental science cannot be quantitative. This is first because quantification in science is a conceptual tool for resolving quantitative problems, which development in itself is not. Second, adding numbers to phenomena has the side effect of 'data alienation', where the data do not represent the original phenomena; the numbers the researcher gathers do not say much about the phenomena he wants to investigate. Third, Valsiner and Rudolph claim that quantification itself eliminates the focus on the process of emergence (Valsiner & Rudolph, 2012, p. 123). When investigating emotions, experiences and thoughts, Valsiner and

Rudolph recommend qualitative methods for researching processes. I think they have a point here, even though their formulations seem bombastic to me.

I wanted to build something valuable for the global IT company, especially for the employees, and now I want to contribute to the research field and to practitioners dealing with learning in the context of work.

Mixed Methods

This study is based in practice and aims to help improve practices rather than being based on speculation (Kjørup, 2014). As this study aims to further an in-depth understanding of learning in the context of work, I want to '*gather multiple types of data and employ various methods*' (Tracy, 2010, p. 844). Thus, I reached out to colleagues and asked them to discuss the research findings. Triangulation means to collect more types of data, more methods, more theoretical frameworks and/or more data sources to establish lend more credibility to the research (Tracy, 2010, p. 843). Triangulation was invented by topographical map makers who wanted to ensure their position in the landscape was correct; but in the human sciences, the term 'mixed methods' is more common. By using observations, interviews, future workshop and diaries, I have used mixed methods. Moran-Ellis et al. claim that

> '*mixed methods have been actively promoted, particularly in relation to research concerning social problems….*' (2006, p. 46).

The scientist is supposed to be neutral regarding the researched phenomenon, the methodology, the methods and the data (Kjørup, 2014). In this case, this is an issue as I was heavily involved in the research, invention, development and implementation of the educational design for learning from experience in the context of work. In order to minimize bias, I will stress *transparency* and *reliability* (Brinkmann & Tanggaard, 2010).

Transparency enables the reader to understand why the researcher chose the methods in use (Justesen and Mik-Meyer, 2012, p. 39). The point is not for another researcher to replicate the method, for example, the interview (that would most likely give another result, as the interviewer is different) but to enable the reader to assess the research design, the prerequisites and the results (Brinkmann & Tanggaard, 2010, p. 491).

Reliability means that the objective and intentions of the researcher are clear for the researcher and for those to be studied

(Pedersen et al., 2012, p. 163). Reliability is especially important in the interview situation, where the researcher unconsciously could ask leading questions and by doing so create a certain result instead of making the interviewee state his own point of view (Kvale, 2002, p. 231). According to Gibbert et al., reliability is high when the research lacks random errors and the findings can be replicated by another researcher using the same research procedures (Gibbert et al., 2008, p. 1468). Still, another researcher would most likely obtain different results, according to Brinkmann and Tanggaard (2010).

3.2 WHY DESIGN-BASED RESEARCH?

I study learning in the context of work from a learning perspective, so the methodology should mirror this approach. The development of PR is based on practice and thus the methodology should embrace practice.

My intention with this PhD study is to provide new theory on learning in the context of work, new perspectives on the methodology I use and new practices for learning in the context of work. The methodology should support my endeavours to achieve these objectives. According to the Design-Based Research Collective, DBR bridges theory and practice with the aim of contributing to more efficient learning (Design-Based Research Collective, 2003, p. 8). Therefore, DBR seems to be a suitable methodology for this PhD study.

As the development of PRs lasted for seven years and included several iterations, the methodology should allow for longitudinal studies in order to determine how knowing evolves over time. DBR is an iterative process of design, enactment, analysis and redesign leading to the development of new theories, artefacts or practices for learning in authentic learning environments (Barab & Squire, 2004). DBR is an iterative process where the research is driven by the test and vice versa (Anderson & Shattuck, 2012), and therefore it appears to be useful for this PhD study.

According to Dewey (1976) and Fuglsang and Olsen (2004), the methodology should embrace the historical and social context. DBR provides variables for the historical background, the physical surroundings, sociological aspects and Ba. The theories presented above showed that learning from experience in the context of work is not a straightforward process but rather is both messy and complex. Originally, DBR was developed and used for studying learning in the context of schools, that is, classroom training. DBR

is a suitable methodology because it embraces messiness and complexity in an authentic learning environment, which in this study is the learning environment in a global IT company.

As the starting points for learning are perplexity, confusion or doubt (Dewey & Boydston, 1976) and disturbance, contradictions or conflicts (Engeström, 2001), this PhD study requires a methodology that can apply to such situations. DBR meets this requirement, as the starting point is the identification of the problem or issue to be investigated (Collins et al., 2004, p. 33). Consequently, DBR could be beneficial for this study.

The methodology should provide insights into actions that lead to the learner's development of knowing and experience (Dewey & Boydston, 1976), and it should enable the researcher to see learning from the perspective of the learner (Fuglsang & Olsen, 2004). The methodology should also clarify how knowing is constructed between learners. DBR looks into the social interaction between learners (Collins, 2010) and provides multiple ways of looking at the learning process from individual and group perspectives (Collins et al., 2004, p. 35). Therefore, DBR seems suitable for this study.

The methodology should clarify the roles in the context of learning, which in this PhD study include the PR participants and the PR facilitator. DBR uncovers group dynamics and the interactions between learners and facilitators (Collins et al., 2004, p. 35). Furthermore, the methodology should show how the learners identify problems and solve them based on their own expertise. DBR provides variables for change in the dispositions of the learners and the development of their skills and learning strategies (Collins, 2010, p. 3). Therefore DBR may be valuable for this study.

Because I was both the researcher and the Manager of Organizational Learning, the methodology has to imply the researcher in different roles. In this case me as the researcher and also me as an active participant in the research object. It may be an advantage that I was an integrated part of the context, as I was acquainted with the history and social relations in the global IT company, and I knew the development of the organization inside out. Being in this position is the opposite of being a 'neutral researcher' who comes into an organization as a stranger. In DBR, there is not a strong distinction between the researcher and those to be studied (Collins, 2010). New experience and insights are

created collaboratively between the scientists and the participants. The active involvement of the participants makes it possible for the researcher to take advantage of the participants' expertise (Barab & Squire, 2004, p. 4), and thus DBR seems beneficial for this study.

The aim of learning is to become aware of the realities and to influence those realities (Engeström. 2013; Fuglsang & Olsen, 2004). DBR may be a suitable methodology in this regard as the participants are invited to influence the educational design (Collins et al., 2004). According to Collins,

> *'A goal of design research is to improve the way a design operates in practice'* (2004, p. 34).

DBR stresses that the value of a theory lies in its ability to produce change in the world (Barab & Squire, 2004).

3.3 GUIDELINE FOR DESIGN-BASED RESEARCH

> DBR *'is a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories'* (Wang & Hannafin, 2005, p. 6).

DBR is not a well-defined methodology; rather it is a combination of processes leading to knowing about learning that include qualitative and quantitative data (Collins et al., 2004, p. 16). Collins et al. (2004) provide guidelines for DBR consisting of

1) Implementing the educational design, including critical elements of the educational design and how they interact.

2) Modifying the educational design; each modification starts a new iteration of the development of the design.

3) Analysing the educational design, including the perspectives of the cognitive development of the individual learner, the resources available for the learning processes, the interpersonal relationships between the learners and the facilitator as well as between the learners, social aspects of the group involved and institutional aspects, such as stakeholders' engagement and support.

4) Measuring the dependent variables, such as engagement, cooperation and risk taking.

5) Measuring the independent variables, such as the context, the nature of the learners, required resources and professional development.

6) Reporting on the DBR should include the goals and elements of the educational design, the research setting, a description of the iterations and the findings/outcomes and lessons learned (p. 33).

The starting point of DBR is the identification of critical elements. These may be identified as something disturbing (Dewey & Boydston, 1976), requirements for work-related knowledge (Nonaka & Takeuchi, 1995) or disturbance or contradictions (Engeström, 2001).

DBR allows the educational design to be tried out and refined several times. A new iteration requires a description of the disturbances that would lead to changes in the educational design. According to Collins et al. (2004), the researcher or teacher should be aware of obstacles within the teaching situation and gather information about those obstacles in order *to*

> *'fix whatever problems appear to be the reasons for failure'* (Ibid., p. 34).

The researcher documents failures and problems that occur while running the educational design in order to improve it.

According to Collins et al. (2004, p. 35), the analysis of the educational design may include three ontological dimensions of learning—the personal, the group and the organization.

Collins has set up a number of variables for researching the complexity in learning situations in real life, and he categorizes them as dependent variables and independent variables (Collins, 2010, p. 4). Dependent variables are those that the teacher may influence directly, whereas independent variables are contextual (Collins et al., 2004, p. 37). Collins points out that the variables are not to be held constant; quite the contrary, the variables are to enable the researcher to characterize the situation (Collins, 2010, p. 1). According to Collins et al. (2004, p. 38), it is important to report the process and the results of DBR.

3.3.1 CRITICISM AND FURTHER DEVELOPMENT OF THE GUIDELINES FOR DBR

Collins et al. (2004) do not include additional theories after identification of the problem before the development of a new educational design, but Anderson and Shattuck (2012) recommend conducting a literature review before the creation of a new intervention. Therefore, I will add 'theoretical considerations' to the DBR flow.

Collins et al. (2004) do not point out difficulties in the data collection. They suggest that the researcher looks for available resources and that they are easy to understand and use. Collins et al. (2004) also suggest conducting observations and interviews to explore the development of the students' cognitive level, but they do not point out the implications of these methods. I will add 'considerations on methods and data collection' to the original guidelines. My intention is to incorporate a variety of methods and data sources in the development of the educational design called PR.

Collins et al. (2004) suggest more aspects for analysis, first the *interpersonal level*, which *a*ddresses the interactions between the facilitator and the participants, as well as the interaction between the participants and second, the *group* interactions between the participants. When utilizing DBR for specific data, the difference between the interpersonal level and the group level becomes unclear, so in my analysis I will combine the two levels and call it the *group level.*

According to Collins et al. (2004), resources are an aspect to analyse as well as a variable. I think the point is that from an analytical point of view, the resources have an impact on the participants, whereas resources from a variable point of view illustrate what could be needed to carry out the design. When working with the data, this distinction is not clear; therefore, I will gather resources under variables.

Collins et al. (2004) suggest measuring the variables, but engagement, cooperation, risk taking and understanding other's points of view may be hard to 'measure'. Consequently, I will look for these issues without measuring them. According to Collins et al (2004, p. 20), it is important to include as many variables for researching the educational design as possible (Collins et al., 2004, p. 20), but in order to keep to the overview and not get overwhelmed by data, I will only use some of the variables suggested by Collins et al. (2004). As explained above, I perceive learning a social process that takes place in a historical context

and that includes social aspects. The boundaries between what the teacher may influence (the dependent variables) and what the teacher does not influence (the independent variables) are not strict. Therefore, I will not distinguish between dependent and independent variables as, suggested by Collins et al. (2004).

Strangely, 'stakeholders' are not mentioned by Collins et al. (2004), Collins (2010), Dede (2004) or Anderson and Shattuck (2012), even though they describe the importance of some of the stakeholders, for example, the teacher and the students. Collins et al. explain (2004) that it is important to involve the students, as they have a huge influence on the implementation of a design. However, the collaboration with the stakeholders, including other parts of the organization, is not a part of the DBR guidelines provided by Collins et al. As this study was heavily dependent on the relationship between the researcher and the stakeholders (Pedersen et al., 2012), I will add 'how stakeholders and the researcher worked together' to the DBR flow.

3.4 THE FLOW OF DBR IN THIS STUDY

DBR is an iterative process in which the educational design is refined. Consequently, it fits the perception of learning being a process metaphorically described as a spiral. DBR is developed for studying in-class training (Collins et al., 2004; Collins, 2010). Here, it will be used for learning in the context of work. Therefore, I will refer to the facilitator, who conducts the PR, instead of referring to the teacher, and I will refer to the participants (in the PR) instead of students. Furthermore, I will add managers as they have a certain role to play when employees learn in the context of work.

As mentioned above, the DBR guidelines presented by Collins et al. (2004) lack theoretical considerations to support the problem identification in a new iteration. In order to follow the iterations, I suggest that the educational design should be numbered. Consequently, the educational design in this PhD study is numbered using version x. The x is number one to five in this PhD thesis. The original guidelines do not provide methodological considerations, even though they suggest various quantitative and qualitative methods. This PhD thesis will explicitly consider the methods. The number of variables suggested by Collins et al. (2004, p. 33) is cut down, and this thesis does not distinguish between dependent and independent variables. The invention and development of the educational design called PR is based on collaboration between various stakeholders and the researcher; thus, it is important to reflect upon how the stakeholders and the

researcher worked together. This PhD study will follow the sequence of nine elements described below, and the sequence will be called the DBR flow.

This DBR flow is repeated for each time the educational design is redesigned, which I call 'iterations'.

Below, I will present the nine subset parts of the DBR flow and discuss them.

3.4.1 PROBLEM IDENTIFICATION

The point of departure for DBR is a problem that may be a disturbance or an uncertainty (Dewey & Boydston, 1976), a need for acquiring work-related knowledge (Nonaka & Takeuchi, 1995) or disturbances or contradictions (Engeström, 2001). It also may be critical elements in the educational design discovered by the facilitator, the researcher, the middle managers, the top management or new requirements emerging due to the organizational development.

The DBR Flow

1. Problem identification
2. Theoretical considerations; new theory is included for each iteration
3. Modifying the design – Educational Design version x
4. Considerations on methods and data collection
5. Analysing the design
6. Utilizing the variables
7. How the stakeholders and researcher worked together
8. Reporting on DBR
9. Conclusions and contributions to the research field

Figure 6. The DBR Flow, my own making.

3.4.2 THEORETICAL CONSIDERATIONS (NEW THEORY IS INCLUDED FOR EACH ITERATION)

The problem that initiates a new iteration of the educational design needs to be investigated and understood in order to provide sustainable solutions. The theoretical considerations add new views and enable the development of a new version of the educational design and '*improve the way the design operates in practice*' (Collins et al., 2004, p. 34). New theory provides a new

lens to explore the problem and to formulate a working hypothesis or suggestion for a solution by offering argumentation (Miettinen, 2000); this way, theories become instruments (Dewey, 1908, p. 88).

3.4.3 MODIFYING THE DESIGN – EDUCATIONAL DESIGN VERSION X

The educational design should be described and given a name like version x to distinguish the steps of development from each other. Iterations are prompted by a problem or an issue, as described in the 'problem identification', and the researcher looks for relevant theories before she/he makes a plan for the development of version x that includes the different steps in the DBR flow. The result of the modification is to fix '*whatever problems appear to be the reasons for failure*' (Collins et al., 2004, p. 34).

3.4.4 CONSIDERATIONS ON METHODS AND DATA COLLECTION

The development of the educational design from version x to version x+1 is based on thorough investigation. The researcher considers methods and data gathering in order to define and study the problem and/or in order to test a solution. If possible, the researcher should look upon the problem from different perspectives, come up with solutions and criticize these solutions. Preferably, the researcher works collaboratively with peers who may add more perspectives. I draw on Ernst Schraube's (2010) work on the first, second and third person perspectives, as discussed in section 3.5.

3.4.5 ANALYSING THE DESIGN – MULTIPLE WAYS OF LOOKING

Collins et al. (2004, p. 35) suggest five aspects to consider when analysing an educational design—the cognitive development of the individual learner, the resources available for the learning processes, the interpersonal relationships between the learners and the facilitator as well as between the learners, social aspects of the group involved, and institutional aspects such as stakeholders' engagement and support. The ontological dimensions for learning described in chapter 2 were individual learning, team learning, organizational learning and inter-organizational learning.

When the five aspects of analysis are compared with the four ontological dimensions, it turns out that at the individual dimension the researcher should analyse *cognitive* changes. At the team dimension, Collins et al. provide the *group level* that shows the interactions between the facilitator and the participants and the interaction between the participants, as well as the social aspects of the group. At the organizational dimension, Collins et al. (2004) suggest conducting an analysis of the resources available in the organization. These different aspects are described in more detail below. Collins et al. (2004) do not include inter-organizational learning.

According to Collins et al. (2004, p. 35), the change in thinking or behaviour is the learning itself; consequently, it is important for the researcher to capture at least *some* of the changes. By conducting an analysis at the *cognitive* level, the researcher explores how the understanding of the learner changes as a result of the learning situation.

The interactions at the *group level* reveal the group identity and group dynamics, such as authority or domination, silence, participation or lack of participation within the group, and the learning at the group level captures the development of relationships, knowledge sharing and respect between the participants (Collins et al., 2004, p. 35).

Learning at the *institutional level* involves stakeholder engagement and support (Ibid., p. 35), which may be crucial for the development and implementation of an educational design, especially when learning takes place in the context of work.

These aspects of analysis will be utilized in chapter 4, where I reflect upon the articles that include some of the iterations of the PR.

3.4.6 UTILIZING THE VARIABLES

According to Collins et al. (2004), it is more important to explore than to measure what is going on in the learning situation. Following are the variables that may characterize the learning situation (Collins, 2010, p. 1).

C*limate variables* describe the following behaviours of the participant: engagement, cooperation, risk taking, efforts to understand others' points of view and participant's control (Collins, 2010, p. 3). Therefore, in the analysis I will look for the participants' ability or need to take risks and will acknowledge when the participants make an effort to understand alternative points of view given by other participants. The analysis may

include considerations about taking risk, bearing in mind that taking risks may cause the educational design to collapse if some participants feel offended or scared.

Outcome variables include content knowledge, skills, dispositions, metacognitive strategies and learning strategies (Collins, 2010, p. 3). Outcome variables show how the learners become more knowledgeable about the content, and their disposition may change. The content to be learned is related to the vision and objectives of the organization, for example, the improvement of products, services and work practices rather than learning to improve competences (Brandi & Elkjaer, 2011).

Resources include the materials available to the participants and how easy it is for the participants to find and use the materials; and information and communications technology (ICT) becomes an increasingly important resource that comes to play an important role when the technology frames the learning situation, for example, in online learning situations (Collins et al., 2004, p. 35). The lack of resources could hold up an educational design, so the researcher should explore what is needed to carry out the design in terms of costs, management support, materials and technical support. A part of resources is *professional development,* which could be an obstacle to success because of the lack of skills. *Financial requirements* may be important, as the development and improvement of an educational design has a cost in terms of time, equipment, support and education.

The setting describes where the educational design fits in. In this study, the setting is called the context. According to Collins et al.,

> *'When changes are made in a setting, the reasons for the change should be specified along with the effects of making the changes'* (2004, p. 39).

The nature of learners means certain characteristics of the learners, for example, age, education, position in the organization, seniority etc. (Collins et al., 2004, p. 37).

The list of variables is not a fixed format but a list for inspiration.

3.4.7 HOW STAKEHOLDERS AND THE RESEARCHER WORKED TOGETHER

According to Barab and Squire (2004), the participants are not 'subjects' for the researcher in DBR. It is critical that the participants contribute to the design, give feedback and even take part in the analysis. The active involvement of the participants

allows the option of taking advantage of their expertise (Barab & Squire, 2004, p. 4). Collins et al. explain that it is important to involve the students, as they have a huge influence on the implementation of a design. They will adapt to a design according to their needs, abilities, interests etc. (Collins et al., 2004, p. 17). In this study, not only the participants but the stakeholders influenced the invention, development and implementation of the design, and more stakeholders took part in the learning situation defined by the educational design.

3.4.8 REPORTING ON THE DEVELOPMENT OF PROACTIVE REVIEW

Setting the goals and describing the elements of the educational design is an important part of the development (Collins et al., 2004). Iterations should be described phase by phase according to the guidelines, and the outcomes should be presented. This PhD thesis reports five iterations of the invention, development and implementation, as well as further considerations on the educational design of PR. The development of Proactive Review is reported in five 'articles', and in chapter four I will reflect on these five 'articles' by following the DBR flow explained above.

3.4.9 CONCLUSIONS FROM THE ITERATION AND CONTRIBUTIONS TO THE RESEARCH FIELD

Gathering data and conducting analyses makes us learn. Dewey said that 'Learning is coming to know' (1976, p. 340); therefore, it seems relevant to add this point to the DBR flow. In the next chapter, I will finish the sequence of the iteration with a conclusion that describes what is to be learned from the iteration. This learning may be seen as contributions to the research field. The context is framed by the mediating artefact or tools, the rules, the community and the division of labour in that specific context.

3.5 DISCUSSING DESIGN-BASED RESEARCH

This section explains different methods and different perspectives on the data collection used during this PhD study. The next section discusses requirements for 'good' DBR.

3.5.1 PERSPECTIVES ON METHODS AND DATA COLLECTION

Ernst Schraube (2010) presents three perspectives for studying human beings. According to him, people may be studied from a third person perspective, a second person perspective and a first person perspective. These three perspectives are briefly discussed below.

Third person perspective

In the 'third person perspective', the researcher looks at the people to be studied as 'them' and their environment as 'their world'. The third person perspective is also called 'God's eye' because the researcher is at a distance, neutrally observing the object. The researcher has defined what to look for in order to accept or reject the hypothesis he/she wants to prove. Schraube (2010) argues that humans have the ability to act and that human actions are based on experience, emotions, perception, thinking etc. Further, humans are able to reflect on themselves and their surroundings; they create societies and they have the ability to change their surroundings. But when the researcher keeps his distance and does not become connected to the thoughts and emotions of the subject, the 'I' (the subject) is reduced to a subject without connection to the past, the present or the future. The subject somehow becomes an 'object' (Schraube, 2010, p. 92). Schraube stresses that humans are more complicated to study than other objects and therefore the researcher needs additional research methods. He does not reject the third person perspective, but he advices researchers of human science to include first and second person perspectives as well (Schraube, 2010, p. 101).

Below, 'observation' is briefly described as a method for exploring from the third person perspective.

> Pedersen et al. (2012) define observation as *'a research method in which the researcher understands the meaning of one or more events through observation or participation in the context or contexts of the persons that initiate these events' (*Pedersen et al., 2012, p. 17 (my translation)).

Observations enable the researcher to see what is going on in more detail so that he/she is able to discover important relationships between the people he/she studies, to see their body language and to understand the atmosphere and context (Launsøe & Rieper, 2000, p. 110). Justesen and Mik-Meyer (2010) describe the role of the researcher as a continuum of four types. The first is

the total observer who is like a fly on the wall. On the one hand the researcher does not influence those he studies, but on the other hand he may be at too much of a distance to experience what is really going on (Pedersen et al., 2012, p. 20). The second is the observer as a participant without interfering with the people being studied. The third is the participant as an observer who is an integrated part of the group of people being studied but who still keeps a distance as a researcher. Kristiansen and Krogstrup recommend the researcher define himself as a 'foreigner'; as such, the researcher can maintain distance from the people he/she is studying by not making friends, attending without judgement and being aware of his pre-assumptions (Kristiansen & Krogstrup, 2004, p. 73). The fourth is the total participant who involves himself and acts like an integrated member of the group, perhaps acting under cover (Justesen and Mik-Meyer, 2010, p. 105). When the researcher engages in full participation, he becomes a member of the group being studies. Members of the group develop thoughts, attitudes and emotions during personal interactions; thus, full participation is an efficient way to capture what is going on (Pedersen et al., 2012, p. 18).

As an observer, the researcher enters the field of research as it existed before the researcher appeared. Consequently, the researcher cannot control what is happening, and he/she cannot structure the events occurring. Observing a natural environment, the researcher should stay open minded and accept that the data gathering will be somewhat unstructured (Kristiansen & Krogstrup, 2004, p. 47). Access to the people being studied can be an issue for the researcher (Pedersen et al., 2012, p. 206).

In participant observation, the researcher uses himself as an instrument of research. From a natural science point of view, this may not be 'objective', but from a human science point of view, humans may be a suitable instrument for researching human actions and reactions, as they can absorb and distinguish vast amounts of data that are not numbers (Pedersen et al., 2012, p. 192). On the other hand, the researcher may be biased by his/her pre-assumptions or as a result of what he/she observes. To avoid bias, the researcher must be aware of his/her pre-assumptions and consider the possibility of bias, more about which follows.

Observations may be time-consuming and the amount of data may grow to an extent where the researcher loses the overview (Justesen and Mik-Meyer, 2012, p. 103). But the participant

observations are low-cost and may give access to phenomena that may be uncovered in the research field (Justesen and Mik-Meyer, 2012, p. 96). According to Pedersen et al. (2012), an event may be seen as a social situation defined by place, actors and actions. Place is the physical surroundings in which the observation takes place; the actors are the people being studied and the actions are all the activities performed by the people being studied (Pedersen et al., 2012, p. 43). The researcher may decide what to look for before observing or may let it become a consequence of the observations (Pedersen et al., 2012, p. 74).

Observation may include various kinds of data-gathering, for example, handwritten notes, computer-mediated notes, video or sound recordings. Justesen and Mik-Meyer (2012) recommend that notes are taken during the participation and not after. The researcher may take different kinds of notes. Superficial notes document the flow and descriptive notes include as many details as possible. Analysing notes connects descriptive notes to each other. Reflective notes document the researcher's emotions, thoughts and learning acquired in the field (Justesen and Mik-Meyer, 2012, p. 102).

Second person perspective

Using the second person perspective means to look at the world through 'your' eyes. In the second-person perspective, the researcher and the people being studied interact, and the researcher tries to understand the thoughts and emotions of those being studied. The second person perspective allows the researcher to investigate the actions of those under study and the thoughts, experiences, emotions, and perceptions behind those actions. The researcher may examine thoughts and emotions but exclude actions. This way, the 'I' (the subject) stays a subject, and the researcher and the people being studied somehow build a relationship that may last only a few minutes or a longer period of time (Schraube, 2010). The second person perspective provides a research environment defined by the researcher, who decides who to interact with and how to do it. The researcher almost controls what is happening by preparing well for the event and by defining the questions. The event mirrors the world of the people under study, where the researcher looks into 'you' and 'your' perspective. The second person perspective allows the people being studied to produce data together with the researcher, and the researcher is supposed to be equal to the people being studied when they interact (Schraube, 2010). As discussed, access to the people

being studied could be a problem, both in terms of finding the most relevant people and getting them to participate.

The *interview* is a method used to explore using the second person perspective. The interview is suitable for investigating the experiences of the interviewees as perceived by themselves (Brinkmann & Tanggaard, 2012, p. 32). Interviews enable the researcher to develop theories and practices, if he/she is knowledgeable and well prepared before interviewing (Ibid., p. 34). A research interview uncovers the life world of the interviewee and expresses his/her descriptions of specific situations in ordinary language (Kvale, 2002, p. 41). The interview may empower the interviewee by giving him/her a voice to talk about experiences unknown by anybody else (Launsøe & Rieper, 2000, p. 125). The interview may be structured or just framed by some questions to encourage the interviewee to talk freely about a subject defined by the researcher or by the interviewee (Brinkmann &Tanggaard, 2012, p. 35).

According to Kvale (2002, p. 95), the interview process has seven stages, as follows.

1. Define the purpose of the research/the interview.
2. Develop the research design.
3. Conduct the interview.
4. Transcribe the interview.
5. Identify methods for analysis and analyse the interview/transcription.
6. Ensure high quality.
7. Communicate the results.

Before an interview, the interviewee should be informed about the purpose of the interview. Interviews may be done face-to-face, over the telephone or in a video conference format if the interviewee is not physically present. The geographical distance and the creation of a safe atmosphere on the phone or in a video conference may be obstacles because technology-mediated communication is not always preferable for serious conversations with strangers.

First person perspective

Taking a 'first person perspective' means to look at the world through the eyes of 'I', who can be anyone asked to share his or her point of view on the research topic. The first person,' I', and only this I, knows what I feel, think or consider. An observer would not know because this thinking takes place inside the first person.

The emotions, experiences and thoughts are only available to the researcher if this first person formulates what is on his/her mind. These can only be shared with the outside world if 'I' is willing to share (Schraube, 2010, p. 100). Each of us holds a first person perspective. Schraube (2010) stresses that the first person perspective does not mean being individualistic; the first person may concentrate on something outside him or herself, such as society, teamwork, colleagues, children etc. The first person perspective includes humans in a social context (Ibid., p. 101). As the one who knows 'my' perspective, 'I' accepts 'You' as an alternative, a second 'I', who knows 'your' emotions, experiences and thoughts (Ibid., p. 100). The first person perspective differs from the second person perspective. The 'I' in the second person perspective responds to the researcher who sets the frame for what experiences, thoughts, emotions and reasons for action are 'interesting', whereas the 'I' in the first person perspective delivers his/her experiences, thoughts, emotions and reasons for action unsolicited.

This PhD study includes two methods for uncovering the first person perspective, namely *diaries* and *future workshop*, which will be briefly described below.

A diary consists of written notes, done by an author who is given a timeframe to describe an object. Sometimes, the diary is based on questions given by the researcher. The diary method may be structured or unstructured. The latter means that the respondents define what to focus on and choose what to write down (Corti, 1993). The purpose of the diary method is to give the researcher insight into the thoughts and emotions of the respondents who formulate their individual perception of the object. The aim of the diary method is to achieve knowledge about how the respondents perceive the object without interference from the researcher. Diaries may be used for the validation of interviews or observations or as a part of mixed methods (Launsøe & Rieper, 2000, p. 136).

Future workshop is a method of collaborative development for of a future that includes the needs and dreams of the participants (Rasmussen, 1999, p. 4). A future workshop includes four phases. The first is preparation for and invitation to the future workshop; the second is criticism of the existing format of the situation or the educational design; the third is imagination of the best possible enhancement of the situation or educational design and the fourth is realization of the ideas generated in the previous phase (Rasmussen, 1999).

3.5.2 REQUIREMENTS FOR 'GOOD' DESIGN-BASED RESEARCH

DBR appears to fulfil the basic requirements for 'good' science (described in section 3.1) because it allows looking at the learning process from the perspective of the learner, and the analysis includes consideration of the socio-cultural contexts. DBR includes analysis of the collaboration between peers and conversation as the means of learning. DBR does not constrain learning from experience, and it enables employees to become aware of or influence realities. DBR includes a facilitator in the analysis.

A more critical issue could be that DBR lacks a strong theoretical foundation, which may mean the results reported are simply common sense instead of a refinement of the theories (Engeström, 2011; Dede, 2004, p. 107).

DBR allows a messy setting, which enables research in authentic learning situations, but at the same time the messiness can make it difficult to control the interventions and to control what happens during the learning situation.

Engeström criticizes DBR for allowing the researcher to define the intervention and to implement the intervention without questioning the intervention itself (Engeström, 2011, p. 601). He claims that DBR has a linear approach to the development of educational designs, where the researchers create the design, the teachers implement it and the students are only recipients and the interventions of the students and teachers are ignored (Ibid., p. 600). I will question this statement, as the researcher would benefit and learn from interventions delivered by students and teachers.

Engeström (2011) also questions the variable-oriented approach of DBR, as it implicitly takes perfection, completeness and finality for granted instead of questioning the underlying causality (Ibid., p. 601). I will argue this is not always the case. For example, I have used the variables as inspiration for developing the educational design not on my own but in collaboration with the stakeholders.

The researcher is supposed to investigate at the 'cognitive level' in order to understand what the participant learned using an educational design, according to Collins et al. (2004). I doubt the ability to know anything about the cognitive level, first because this term refers to knowledge rather than to knowing and second because pre- and post-tests rarely fit learning situations in the

context of work where the learners are often unaware they learn and learning objectives are likely missing.

According to Dede (2004, p. 113), the DBR sequence is not clear about the initial problems that prompt an iteration. Dede asks if the problems are identified by practitioners or by theoretical interventions. Bearing this in mind, the point of departure for iterations is defined as the starting point of a spiral that does not distinguish between practitioners or theoretical interventions. This will be explored in chapter 4.

DBR is criticized for having too many variables (Engeström, 2011), and thus this study will not use all the variables suggested by Collins et al. (2004). The variables include engagement, cooperation, risk taking and the effort to understand other's points of view, but it seems a contradiction to *measure* these behaviours, as suggested by Collins et al. (2004).

It may be useful to have standards for deciding when to cancel an educational design or when to finish the development of an educational design or perceive it as finished. Dede (2004) suggests that the design of the research is differentiated from its conditions for success and that these conditions should not be changed between iterations of the DBR. Based on the theoretical considerations in this study, I have set the following requirements for 'good' DBR:

- The individuals and the organizations interact (Elkjaer, 2003).
- PRs embrace work practice (Elkjaer, 2003).
- More kinds of employees are invited to the PR (Pålshaugen, 2001; Elkjaer, 2003).
- The employee will use his or her experience, which includes thinking, knowledge, sensations, emotions and intuition (Dewey & Boydston, 1976; Elkjaer, 2003).
- PRs leads to changes in work practices, product or services (Nonaka &Takeuchi, 1995; Engeström & Kerosuo, 2007).
- Define when to finish the development of the educational design (Dede, 2004).

3.6 MY MIXED ROLE AS MANAGER, TEACHER, FACILITATOR AND RESEARCHER

At the global IT company, I was not a 'neutral' researcher coming from outside the organization. My role was mixed; I was a Manager of Organizational Learning for EMEA, I was a PR trainer, I was the expert in PR, I led the PR community of practice, I

facilitated strategic or problematic cases and I co-facilitated cases with colleagues. At the same time, I was the researcher and developer of PR. My mixed role as manager and scientist could be criticized because I may (perhaps unconsciously) support my tacitly held assumptions.

My mixed role became an advantage as it enabled me to invent, implement and develop the educational design for learning from experience in the context of work, and as the Manager of Organizational Learning for EMEA, I had direct access to all the IT company managers in EMEA. I was connected to the top management in order to maintain interest in and support of the PR program and to make it a continuous part of company strategy.

My colleagues were aware I developed an educational design and perceived me as a colleague from another division. As we did not share an everyday work life, and as we were only connected within a PR or in the PR community, we were never closely connected via any type of friendship. There was a natural distance between me and the participants in the PR and the PR community (Pedersen et al., 2012, p. 216).

Furthermore, I took on two intellectual roles as scientist, as I advocated for DBR and criticized the same point of view (Design-Based Research Collective, 2003, p. 7).

I was heavily involved in the development of the PR from the pilot project and over the whole seven-year period. I collaborated with the people I studied, investigating known and unknown aspects of practice. By doing so, I influenced practice due to the research itself. The development and implementation of PR engaged me, so I was not neutral but contributed my perspectives, pre-assumptions, values and my position in the organizational hierarchy. No matter the role, I have tried to be honest and authentic (Tracy 2010, p. 840), but I must be aware of this 'un-neutral' role (Pedersen et al., 2012, p. 83) and consider bias.

3.6.1 BIAS

Bias is the 'tendency to *confirm* the researcher's pre-convinced notions, so the study therefore becomes of doubtful scientific value' (Flyvbjerg, 2006, p. 234.). According to Flyvbjerg (2006, p. 236), the engagement of the researcher—placed within the context being studied—leads to the best understanding of what is going on. As I am keen to observe particular phenomenon, I might be overlooking other important things (e.g., a carpenter will look for nails and not for needles). If the situation turns tense, I may not stay neutral but take sides. It may be hard for me NOT to

investigate my colleagues' motivations or intentions but just see what I see (Brinkmann & Tanggaard, 2010).

According to Justesen and Mik-Meyer (2010), my involvement does not necessarily cause problems as long as I am aware of my position and role. They perceive it an advantage that the researcher may influence the field of research (Justesen & Mik-Meyer, 2012, p. 105).

The study itself compensates for the bias to some extent. The mixed methods help the study to be less biased, and the many years between the data collection and the use of the data in the context of this PhD study also reduces the bias. In addition, my role has changed as I left the global IT company to become a PhD student, so I do not need to please anybody or consider my career at the global IT company.

3.6.2 PRE-ASSUMPTIONS

In order to minimize bias, I must be aware of my pre-assumptions. I will try to make some of them explicit, knowing well that most of them will still be unconscious (Thurén, 2008).

I believe that humans are social beings and that social processes define who we are and what we learn. We learn in physical surroundings in a social and historical context. I already knew the specific context of the global IT company when I started the PR invention. I had the pre-assumption that the organization perceived knowledge as a commodity, something deliverable and measurable, whereas I perceived knowing as an activity not to be delivered but to be constructed by the 'knower' and that is certainly not measurable. Thus, I had to deal with both perceptions as an employee of the global IT company.

I had (and still have) the pre-assumption that 'experience' is not innocent; experience from work is personal and political and sometimes dangerous to speak out loud. Consequently, I had to think carefully about how to enable employees to share their experiences while bearing in mind the difficulties associated with sharing doubts or 'not-knowing'. The global IT company is hierarchically organized with strong top-down management, which gave me the pre-assumption that managers at all levels wanted to interfere in the learning process in order to ensure the 'right' result. My approach was that a 'right' result does not exist but rather there are better or worse solutions. Therefore, I needed managers at all levels to stay out of the learning process and at the same time engage themselves in the process, allowing the time and space to make PR happen and to implement solutions.

I had the pre-assumption that the global IT company would allow me to conduct a pilot project and that if it was not successful, the project would be terminated and I would lose my job. Fortunately, I had found that colleagues at all levels were eager to learn and that learning was a highly accepted activity at all levels in the organization, so I then had the pre-assumption that I stood a chance of continuing the project.

When the project started, I had not identified the stakeholders, but I had the pre-assumption that I had to build trust with them. The global IT company survives in a highly competitive market, which is made possible by setting and meeting measurable objectives that are increased on a yearly basis. The employees at all levels strive to meet these increased objectives, and those who fail are out of job; therefore, everybody is competing with themselves and their colleagues in order to succeed. I had the pre-assumption that such competition was an obstacle in building trust.

I believe that emotions are the navigation system for human beings leading us in the directions they point to. At the same time, I was raised in Denmark where you lose face if you show negative emotions like frustration; you must stay calm to be acknowledged as professional (Reddy, 1998). This is the background for my pre-assumptions that emotions are suppressed in the work place, even though they are very important as they direct our decisions.

3.6.3 ETHICAL CONSIDERATIONS

The contradiction between my formal power within the organizational hierarchy and my role as scientist necessitates thorough ethical consideration. As the researcher, I had a number of obligations: asking for consent, maintaining a positive atmosphere during the interviews, ensuring confidentiality, considering to what extent the people being studied should participate in the analysis and considering the consequences for the interviewees when the results were published (Kvale, 2002, p. 117). I was aware of my colleagues' desire to appear professional and the risk they may perceive they take by sharing their emotions, thoughts and considerations with a superior. In a competitive environment like this global IT company, it is very tempting to be visible in newsletters or other communication channels. When offering this opportunity to some of my colleagues, I may have jeopardized their honesty and spontaneity.

The role of facilitator of a PR is to observe and intervene when necessary. Thus, I have a double role—facilitating and observing what is going on. The participants knew this beforehand. According

to ethical guidelines, I should obtain the participants' consent to be observed. But as observing is a part of the role of facilitator, I never explicitly asked for consent.

When asking somebody to write and deliver a diary, I should consider the formal power distance between the author and me. If I had been a 'neutral' scientist from outside the organization, the formal power distance may be less clear; but in the present case, the formal power distance cannot be ignored. Therefore, I asked local knowledge managers to ask participants in the pilot project to write diaries. I ensured an approval process for the diaries whereby the author may change the content or refuse publication. However, just asking for publication might have been an issue because I had a higher position in the organization.

The upside of my double role as manager and 'scientist' was my easy access to the people I wanted to study. The downside was the organizational power distance between me and my colleagues, who may easily have given less feedback on occurrences or experiences they found problematic or negative, and by doing so may have delivered less useful information (Kvale, 2002, p. 170). I tried to avoid this by singling out very experienced people who seemed not to perceive me as a superior.

The names of my colleagues have been changed to maintain confidentiality and anonymity (Kvale, 2002, p. 124). I avoided gathering sensitive personal information about my colleagues, and I offered anonymity and kept personal information confidential as much as possible when reporting the results (Pedersen et al., 2012, p. 219). During the development of the PR, I tried to maintain a certain distance and not establish friendships with the people I studied (Pedersen et al., 2012).

3.6.4 SUMMARY

Chapter three presented Collins et al.'s (2004) guidelines for DBR, which were discussed and elaborated to create a new DBR flow that consists of nine steps. This flow was discussed and a set of requirements for 'good' DBR was suggested. My mixed role as manager, teacher, facilitator and researcher was discussed in regard to bias, my pre-assumptions and ethical considerations. In the next chapter, I utilize the DBR flow to describe and reflect upon iterations of the development of PR.

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4 EXPLORING PROACTIVE REVIEW

> *'Still, no studies specifically examine conversations in business settings as a part of an enabling context or Ba for knowledge creation'* (von Krogh et al., 2000, p. 127).

When I read this quote in 2001, I longed to create an educational design for organizational learning, long before I was employed in the global IT company. This PhD study is an attempt for creating such an educational design based on relevant theories and robust evidence.

In this chapter, I will present and discuss iterations of the PR and describe the inventions developed in each iteration. A presentation and discussion of the iterations will follow the DBR

flow that consists of the nine elements developed and described in chapter 3.4.

The DBR Flow

1. Problem identification
2. Theoretical considerations; new theory is included for each iteration
3. Modifying the design – Educational Design version x
4. Considerations on methods and data collection
5. Analysing the design
6. Utilizing the variables
7. How stakeholders and the researcher worked together
8. Reporting on DBR
9. Conclusions and contributions to the research field

Figure 7. The DBR flow (my own making)

Discussions of the iterations can be found in articles, chapters or conference papers. Following, I will discuss each iteration. I have filled in the publication in the beginning of the section in a different font to make it easy for readers to distinguish between the text of the PhD thesis and the text of the publication. The articles are published in various contexts and thus to a certain extent repeat explanations of the research setting and of PR.

The starting point is the very first pilot project that took place in 2005. This was followed up a number of iterations that are:

1. Proactive Reviews, Expanding Individual Experience to Organizational Learning
   published in *Knowledge Management: An International Journal, 13*(2), 2014.
   The article includes the development of the seven questions in the PR and the learning spiral.

2. Proactive Reviews, Fra personlig viden til organisatorisk læring
   Published in *Erhvervspsykologi, 11*(4), 2013.
   The article discusses suggestions for facilitating PRs.

3. Prerequisites for dialogue as the basis for learning in the context of work
   Publication in process.

4. Chapter 5, Proactive Review

Published as Chapter 5 in McIntyre, S, Dalkir K., Paul P. Kitimbo I.C. (2014). *Utilizing evidence-based lessons learned for enhanced organizational innovation and change*. IGI.
The chapter includes suggestions for applying Proactive Review to lessons learned.

5. Online Proactive Reviews
Implications of moving PRs from a face-to-face setting to an on-line setting, a paper presented at the OLKC conference, Oslo, April 2014.

The first article includes two iterations of the development of PR. The first iteration explains how the educational design was developed from After Action Review (AAR) to PR, and the second iteration explains how the original organizational design was expanded to address issues raised by the participants in a PR addressed to the top management without interference from middle managers. The second iteration focused on the role of the facilitators' needs. Both articles are closely connected to the global IT company in regards to the problems the iterations intended to solve. The third article about dialogue is somewhat detached from the global IT company as the question about 'good conversations' comes up in the literature, and I saw it in practice in the global IT company. As the Manager of Organizational Learning, I 'just' stated that PR was based on dialogue, and later as a PhD student I investigated the term 'dialogue' and found that a door opened to a great world of research. I got an understanding of the right conditions for meaningful dialogue in an organization. Even though the data stems from the global IT company, the findings and conclusions are generic. The fourth article is even more detached from the global IT company, as this book chapter is supposed to foster an understanding of the prerequisites for PR in any organization. The fifth article expanded the scope of PRs from being face-to-face meetings to being run online. This huge change was tested in the global IT company, but the recommendations are meant to be generic.

Below, I reflect on each article that presents the iterations included in this thesis. After the reflections on the iterations, I will discuss how I lived up to the requirements of 'good' science and 'good' DBR. At the end of the chapter, I will present show stoppers for PRs and then will finally share some of the surprises I encountered over the seven years of developing this educational design for learning from experience in the context of work.

4.1 THE DATA COLLECTION AND SOURCES

As mentioned in chapter 1, PR went through 13 iterations in the global IT company, which was followed by another two iterations during this PhD study. The iterations are founded on feedback from stakeholders with different perspectives. First, I needed feedback from the end-users (the participants) and their managers to prove the positive impact. Second, I needed feedback from the facilitators who conducted the PRs to refine the design. Third, I needed feedback from top management in order to continue the development and implementation of PRs throughout the organization. These needs made me consider the perspectives in more detail; thus, I drew on Schraube's (2010) work on first, second and third person perspectives.

Data collection

Table 5. Data collection for Proactive Reviews in the global IT company 2005–2012

		05	06	07	08	09	10	11	12	Sum
Qualitative										
First person perspective	Diaries	2								2
	Future workshop				1	3	1	1	1	7
	KM leads chat		4	4						8
	Unsolicited feedback		3	8	4	2	2	5	5	29
Second person perspective interview	Manager interview	2	2	1	1	4	9	13	22	54
	Facilitator interview	3	2	4	2	1	2	26	4	54
	Participant interview	2	1	1		1	2	5	2	14
Third person perspective	PR observations	4	5	4	6	5	7	3	2	36
	PR community call observations	2	9	10	6	4	4	5	3	43
Quantitative										
	Annual reports				1	1	1	1	1	
Facilitators	F2f course		9	12	9	4	4	5	2	45
	Online course						5	6	6	17
	Community members		78	183	221	343	120	143	174	
Proactive Reviews	Number of countries	4	8	21	24	31	37	39	43	
	Reported PRs	2	4	89	54	No data	49	67	87	
	Mng. challenges challenges								28	

Table 5 presents available data from the seven years of development of PR, but I have not utilized all these data in this study. In the discussion of each iteration in chapter 4, I explain the choice of data and detail the implications of these data.

As I wanted honest feedback, I needed to keep some distance from the people I was studying. For example, I asked a local Knowledge Manager (KM) to ask a participant to write a diary. Only two diaries were delivered to me after the pilot project. The seven future workshops were initiated by me, but sometimes the workshop was facilitated by somebody else in order to enable the participants to be honest and come up with 'weird ideas'. The 29 examples of unsolicited feedback mainly stem from chats, presentations and conversations during the PR facilitator conference calls. Most of the 122 interviews were done over the phone as I did not have the opportunity to meet the interviewees face to face due to travel restrictions. It is probable that I would have obtained much more information by being physically present due to the safe atmosphere that would be created, better opportunities to build trust and the chance to interpret body language. I had a framework of questions for the interview, but I was also interested in things I could have no knowledge of, specifically the perceptions of and the creation of meaning done by the interviewee. Sometimes, the interviewee formulated an experience or an impression for the first time in the interview, and I could not have foreseen what that could be. I did not to record the interviews but only took notes while it was going on. Just after the interview, I created a 'story' based on the interview, including a lot of citations. I sent the story to the interviewee and asked for corrections and comments and got it back within a few days. Some interviews were for my eyes only, but most of them were published in internal newsletters of various kinds. Later, I will come back to the implications of this.

When I facilitated a PR, I was neutral to the issues and the solutions, as I came from a different division and had no professional interest in the results of the PR or the implementation of the results. The 36 observations about the PRs stem from facilitating or co-facilitating the PRs, which allowed me to observe. I mainly took descriptive notes and added signs to indicate my emotional reactions to the behaviour of the participants. The notes have been transformed from hand-written scribbles into a word document, which created order out of disorder. Hopefully, not too much important information was lost in the process. Notes from other facilitators would have been valuable, but because of

confidentiality and the unawareness that the PRs were part of a research project, I never gathered observation notes from other facilitators. When reporting observations, I maintain the anonymity of the participants.

The 43 community calls gave insights into the needs and difficulties of the facilitators, which sometimes led to new iterations of the educational design.

The only quantitative data I use in the PhD thesis is the annual reports for the Department of Organizational Learning, EMEA, for the fiscal years 2010, 2011 and 2012. The fiscal year starts June 1; thus, for example, fiscal FY10 starts June 1, 2009 and ends May 31, 2010.

4.2 FROM AFTER ACTION REVIEW TO PROACTIVE REVIEW

This section will describe two iterations of the PRs—the pilot project from 2005 and the process for identifying and addressing management challenges for top management from 2008. I have chosen these two iterations in order to present the historical background and to present a study on learning across knowledge hierarchies or organizational hierarchies, as required by Nickelsen and Elkjaer (2014). Furthermore, these two iterations lead to the final educational design of PRs consisting of seven open questions.

The development itself is described in the article *Proactive Reviews: Expanding personal experience to organizational learning* published in September 2014 in *Knowledge Management: An International Journal*, *13*(2).

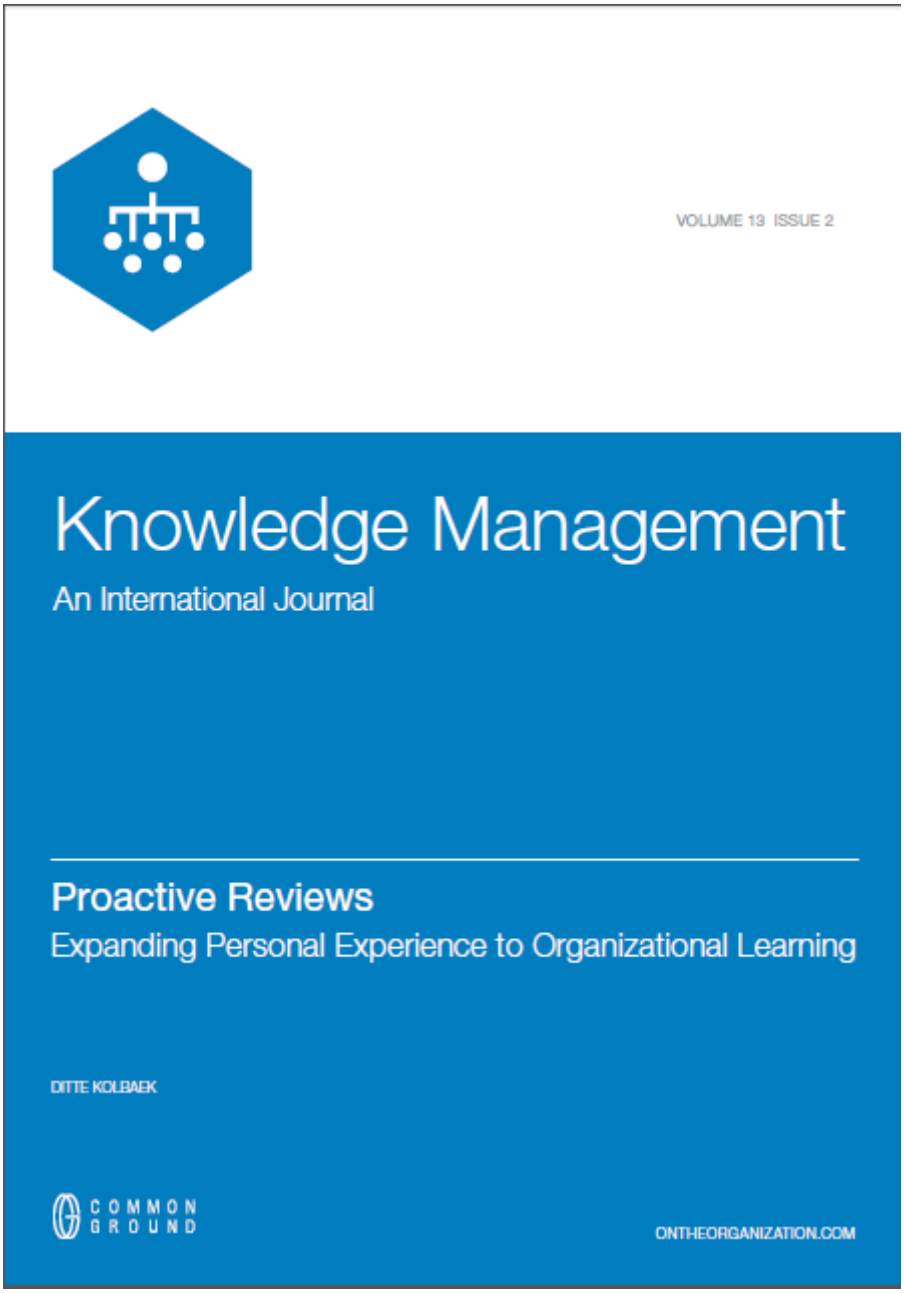
4.2.1 PROBLEM IDENTIFICATION IN ITERATION 1 AND A LATER ITERATION

The article explores the research question of 'how to expand individual experience to organizational learning?'

Even though it was not explicitly stated, I knew the pilot project had to be successful, otherwise the experiment would be terminated. Therefore, I needed to fulfil the needs of different stakeholders. To ensure the top management that the project was on the right track, the process needed to be recognized and implemented in another large organization. To align with the participants' skills, the educational design should be based on oral communication because the IT staff was not skilled in written communication. Managers at all levels would need an educational design that could provide 'visible' results, that is, results that are measurable and/or communicable.

Based on discussion in the EMEA Knowledge Management Team (consisting of five experts in knowledge management and organizational learning), we decided to pilot AARs, which were originally developed by the U.S. Army as a way of debriefing soldiers after combat or as training for soldiers and superiors to learn from experience (U.S. Army, 1993, p. ii).

In 2008, the top management asked about gaining insights into important matters identified in PRs. This article explores the development of a process that was invented to fulfil this top management requirement.


VOLUME 13 ISSUE 2
Knowledge Management
An International Journal
Proactive Reviews
Expanding Personal Experience to Organizational Learning
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4.2.2 THEORETICAL CONSIDERATIONS

The article draws on the works of Engeström (2008), Nonaka and Takeuchi (1995) and Senge (1999) without questioning the differences between organizational learning, the learning organization or organizational knowledge described in chapter one. The reason is that this differentiation first came into the PhD study at a later stage. Here, we see examples of something I learned during my PhD studies. Senge (1999) dwells on the term 'conversation' and refers to David Bohm, which became a valuable inspiration to me and which I will come back to in a later iteration. I also realized that conversation should be the backbone of the process and that the learning process could be perceived a spiral.

4.2.3 MODIFYING THE DESIGN OF AFTER ACTION REVIEW, PILOT PROJECT VERSION 0

An AAR has four questions that are to be asked in this specific sequence:

- What did we set out to do?
- What actually happened?
- Why did it happen?
- What are we going to do next time? (Garvin, 2000, p. 2)

The participants in AARs compared the objective with what was actually achieved by answering these four open questions that uncovered the strengths and weaknesses of individual, team, and management performance. All participants contributed to the dialogue on equal terms (U.S. Army, 1993, p. 2). It was crucial to get honest and rich feedback from the participants and their managers who received the results of AARs and who were supposed to implement the AAR suggestions.

4.2.4 CONSIDERATIONS FOR METHODS AND DATA COLLECTION IN THE PILOT PROJECT AND A LATER ITERATION

In order to minimize my bias, I utilized mixed methods to look at the pilot project from different perspectives. The first person perspective included two diaries and a future workshop. The second person perspective included an interview with a manager who asked for an AAR. The third person perspective included observations of a web conference between facilitators who discussed their experiences running AARs.

Table 6. Data collection for the article 'PR - Expanding personal experience…. '

Perspective	Data source	Number
First person	Diaries	2
	Future workshop	1
Second person	Interview	1
Third person	Observations	1

The sample is small. I do not see this as an issue, as the data clearly shows the strengths and weaknesses of the AAR format.

Diaries 2005

I used diaries because I needed personal insight into the participants' thoughts and emotions about the educational design. It was crucial for the development of the educational design that this feedback was honest and rich. Therefore, the authors needed to be able to take the time needed to formulate (and re-formulate) their impressions as is convenient. My hope was that they would provide information that would help me improve the educational design. I defined the purpose of the diary and the topics to be written about (Pedersen et al., 2012, p. 163) and handed the diaries over to the local knowledge manager in each country. The objective of the diaries was to capture AAR experiences.

The diaries were kept from the time of invitation to the AARs until seven days after the AARs, which I estimated was enough time to get the information I needed yet short enough to keep the authors engaged but not overloaded (Launsøe & Rieper, 2000). The diaries were not to exceed two pages in length in order to make it easy for the authors to do the writing and for me to deal with the amount of data.

The diaries were semi-structured, as I needed specific input, but the participants were informed this should not be a limitation. They were to include a brief description of the case for me to understand the context of the AARs, the outcome of the AARs and the potential business benefits of the AARs. I wanted to explore how the understanding of the learners changed as a result of the AARs; therefore, I looked into the participants' recommendations to their colleagues and managers. It was also important for me to understand how the participants felt and thought about the AARs, so I asked the authors to give feedback on these matters. I only received two diaries from two of the seven participants.

The diary of Paul is not the original diary but a story based on the diary. Important doubts, considerations or emotions may have been lost in the re-writing process, but I am not sure because the original diary has been lost. You may question whether Paul's utterances are reliable, as he agreed that the diary could be published as a story, which means he would be exposed. This means that he may have considered what his superiors might think about his comments. Maybe he would like to give a positive impression to his manager, the country manager, the local knowledge manager or me. He may have been honest regarding the process and the results of the AAR, which he describes clearly and thoroughly, but he does not express any criticism or doubts, which is a concern in terms of the development of the educational design.

Dan's contribution is not a diary but a presentation. I do not know why he did not want to hand over the diary; perhaps he never wrote it, perhaps it was too private or perhaps he did not like the content. We will never know. Instead, he produced this presentation and insisted on relating his experience to colleagues. For Dan, it seemed more important to share his experience as widely as possible than to deliver a diary to me.

His behaviour and comments during the presentation show he is delighted with the educational design of the AAR, and he comes up with several suggestions for improvements. Dan is not shy to describe what he felt during the project or during the AAR, which give the impression that he is honest, and he makes himself clear by giving both the text on the slides and the comments below. He is thorough as he goes into detail about the issues needing to be addressed and about how to resolve these issues. He also adds new ideas for the educational design of the AAR, such as having a neutral facilitator, a communication plan, specification of the question 'What should we do next time?' and a suggestion about running AARs throughout a project period. Dan's contributions seem highly reliable, even if they are not in the form of a diary, and I have used them in developing the educational design of PRs as well as in this context of the PhD study.

Interview 2005

I interviewed Fred because he was the first manager to try out an AAR in the sales division in 2005. Fred was new in his role as director of a sales centre. It was important for the development of the educational design to explore his experience and to know how he perceived the AAR (Brinkmann & Tanggaard, 2010, p. 32). Therefore, the interview was semi-structured so that Fred could

talk freely. Fred was above me in the formal hierarchy of the global IT company, and I hoped he did not intend to please me but would be honest. This interview was done face-to-face. We spoke for approximately half an hour in a meeting room at the manager's location. The interview was documented through hand-written notes taken during the interview (Brinkmann & Tanggaard, 2010, p. 32).

On the same day the interview took place, I wrote a story for an internal newsletter. A few days after, I corrected the article and sent it to Fred, who made a few word changes and approved it. The citations from Fred are taken from this story.

Fred's motivation could have been increased visibility. This might have influenced his answers, which did not include any criticism, perhaps because this new director wanted to appear powerful and competent. The many positive answers indicate that the atmosphere was positive during the interview and that Fred related his personal experiences honestly. Confidentiality was maintained as Fred read and made some alterations to the text before it was published. The positive impact for Fred might have been increased visibility in his new role as a manager of a new sales centre. The negative impact might have been that he gave promises in this published story that could have been hard to keep.

Observation of the web conference 2005

As mentioned above, the participants in the web conference were facilitators who discussed their experiences running AARs. The feedback and the exploration of the facilitators' experiences could give important information about group dynamics that was not covered in the diaries or interview. Also, the facilitators had a different role and their perspectives were important for the development of the educational design. The data does not include video observations or recordings of any AARs or PRs as they were confidential. The facilitators took handwritten notes during the AARs, or they 'just' remembered and shared their experiences in the web conference. The facilitators' experiences are named 'unsolicited feedback' in Table 4. In my role as community leader, I managed the web conferences, and the facilitators knew this. They were never explicitly asked for consent. According to Justesen and Mik-Meyer (2012), one might say I was a 'participant observer'.

Future Workshop 2008

In 2008, the top management wanted to gain insight via the PRs. Specifically, they wanted to know if something came up that could not be solved locally, for example, difficulties with processes decided by headquarters. Additional changes to the educational design were needed. I formed a small taskforce of four experts from the UK, Switzerland and Ireland representing the most engaged and experienced facilitators from the largest and most influential entities in the global IT company. This taskforce was led by a skilled facilitator (who was not me). The new educational design would most likely include new actions by more stakeholders, and everybody in the organization needed to re-think behaviours leading to learning. A future workshop seemed to be an applicable method for this phase of the development of PRs (Rasmussen, 1999, p. 4).

The taskforce agreed on a time schedule starting with two conference calls to establish group belonging and to create a common understanding of the task. The formation phase was followed by a one-day face-to-face meeting during which we could be innovative and come up with 'weird' ideas. Afterwards, the taskforce continued the work over several months by having individual tasks and common conference calls every third week (Rasmussen, 1999, p. 8). The result was the inclusion of an additional question to the design of the PR, namely 'What management challenge might be addressed based on this PR?'

This question enabled the top management to receive inputs from the 'grass roots' without interference from middle managers. This question also included the top management in the learning process. This enabled me to develop a metaphor for the learning process called the learning spiral, which illustrates learning on three ontological dimensions—individual, team and organizational learning.

My role

In order to get as honest feedback as possible, I tried to withdraw myself as much as I could during the data gathering, but I am aware that I did not entirely succeed. Regarding the diaries, I asked local knowledge managers to ask participants to write a diary, and I only received one. The reason could be that the participants did not want to offend a manager in a higher position or that they were not interested in doing this voluntary extra work. The most influential diary was delivered not as a diary but as a PowerPoint presentation. The author was very senior and at the same organizational level as me and thus did not perceive me a

'high level manager'. However, it seems relatively obvious that my role was an obstacle for honest feedback from Paul, who delivered a diary.

The interview with sales manager Fred allowed me to stay in a lower hierarchical position than the interviewee, which I thought was beneficial in terms of honesty. However, I probably jeopardized that honesty by suggesting the interview be published in a newsletter. This may have changed the agenda for Fred, who could foresee that he would be exposed as an initiator in regards to AARs and consequently did not want to be too critical. Additionally, I wonder if I kept an open mind or if I was too eager to show the success of the AARs in capturing statements that could be perceived as negative.

I also observed the facilitator community as a part of managing the web conference. The facilitators perceived me as the leader of the community, but I dare say the facilitators were honest in the feedback as it included criticism and new requirements. My approach was to ask for concerns; this was followed up by discussions between the facilitators during which I stayed silent in order not to interfere or dominate. From my perspective, my role was to give space for doubts, concerns or disagreements relating to the educational design instead of being a leader who knows all the answers. I knew I did not, and I made this explicit.

The future workshop was led by an experienced facilitator, and the participants were at my level, one level below or higher in the global IT company, which allowed me to contribute on an 'equal' basis. At least that was my opinion at that time. Today, I can see that I may not have been entirely 'equal' because the development of the educational design was my obligation.

Ethical considerations

The authors were informed their diaries were for my eyes only, so they were ensured confidentiality and anonymity if they wanted. But one diary became the basis of a story that was published in an internal newsletter, and the author was known as a knowledge-sharing exemplar. This switch from confidentiality to exposure, not initiated by the diary author, seems questionable in terms of ethics.

The dialogues in the future workshop were confidential, and all participants were aware that we would continue exploring 'weird ideas' until consensus was achieved. Their participation in the taskforce was not anonymous but quite the opposite as they were exposed as being experts in the field. Their participation in the

future workshop added value to their professional careers. In this case, there was no contradiction between intentions and reality.

4.2.5 ANALYSING THE EDUCATIONAL DESIGN OF AFTER ACTION REVIEW, VERSION 0

The diaries were to explore the *cognitive* level, which I also refer to in the article *Proactive Reviews: Expanding personal experience to organizational knowledge*. Today, I would not use this term but would rather try to find out if the participants changed points of view and/or proposed solutions or development of the issues discussed in the AAR. Again, I understand that doing this PhD study is a voyage of discovery.

The facilitators discussed the *interpersonal level* and the g*roup level* in the web conference where they shared their experiences of facilitating. They discovered an occasional lack of respect or domination between the participants but also enthusiasm in the conversation.

At the *institutional level*, I experienced both engagement and support from various stakeholders. The top management asked me to develop and implement an educational design for learning from experience in the context of work; middle managers asked for AARs so that the pilot project could be realized; peers volunteered to be trained facilitators and to facilitate in addition to their everyday jobs and two participants volunteered to write a diary.

4.2.6 UTILIZING THE VARIABLES

During the pilot project, more *climate variables* were at play. Managers, participants and facilitators engaged, the facilitators took risks by sharing their doubts and concerns in the web conference and the participants made an effort to understand each other's points of view.

We saw that Dan became more knowledgeable about AAR and about project management, and the facilitators improved their ability to facilitate by coming forward with new requirements to support the educational design. In addition, the facilitator June suggested a new learning strategy to handle conflicts. We see that more *outcome variables* were utilized.

The pilot project also uncovered *resources* required. Management support was given, and that was a prerequisite for the pilot project to take off. The facilitators stated that professional development was required in order to handle unpredictable group

dynamics. The participants, the facilitators and the middle managers volunteered their time to participate in the pilot project.

4.2.7 HOW STAKEHOLDERS AND THE RESEARCHER WORKED TOGETHER

In the pilot project, I worked closely together with the stakeholders. The closest collaboration was between the PR community and myself, and this collaboration allowed me to gain insights into the facilitators' concerns and the obstacles they experienced. The collaboration with the participants varied. Dan contributed heavily to the educational design by being both honest and specific in his feedback, whereas the connection to Paul was more at the distance, and his contributions were vague. Fred, the middle manager, initiated the AAR and agreed to be interviewed. His feedback was very useful, even though I might have gained more if I had not offered to publish the story. The collaboration in the future workshop was successful. I am still surprised and very thankful to my colleagues for all the voluntary work they did in order to develop and maintain learning from experience in the context of work. Perhaps they collaborated because they realized the need for learning from experience or because learning was a part of the strategy or perhaps I was just lucky to meet motivated people. The spirit in the global IT company seemed to support new inventions and ideas, and this initiative fit well with general requirements.

4.2.8 REPORTING THE TRANSFORMATION OF AFTER ACTION REVIEW INTO PROACTIVE REVIEW

Reporting internally in the global IT company progressed as new versions and results of PRs were important for the penetration of the educational design in the organization. Consequently, PR results were reported continuously in various media, such as internal newspapers, blogs, websites etc.

The pilot project was reported in various ways. The interview with Fred was published in a newsletter in order to raise awareness of the educational design throughout the sales division, which was the most influential division of the global IT company. PR was published in an internal newsletter, presented at several facilitator web conferences and used in the facilitator training throughout EMEA. I presented the PRs to the top management, particularly

the requirements for top manager action when management challenges were addressed. The PRs were presented at different internal conferences and gatherings, and the local knowledge managers presented it to local country management.

External reporting on the transformation of AAR into PR is to be found in the article *Proactive Reviews: Expanding personal experience to organizational learnin*g, published in September 2014 in *Knowledge Management: An International Journal*, *13*(2).

4.2.9 CONCLUSIONS ON 'FROM AFTER ACTION REVIEW TO PROACTIVE REVIEW', VERSION 0

This first iteration showed that the four questions in the AAR lacked direction for the conversation, lacked a plan for communicating and achieving the preferred present and a favoured future and did not include meta-reflection. Furthermore the pilot project showed the need for a facilitator to maintain Ba. The question 'What happened and why?' enabled the participants to express frustrations and thoughts that had been tacit until the PR and to use historical analysis to determine what did not work and to define problems to be solved. The AAR lacked processes for spreading the learning horizontally between peers and vertically in the organization. This first iteration led to a new educational design for learning from experience in the context of work and included the following inventions:

1. The educational design of the four questions in an AAR is enhanced by adding more questions so that the PR consists of seven questions. The PR includes social interaction. Learning from experience was a new invention in itself in the global IT company, and PR enabled the participants to build relationships and become more skilled practitioners.

2. The question 'What is the purpose of this PR?' set a specific objective for the conversation and helped create a common mind-set for the PR. The purpose is defined by the middle manager who receives (and implements) the action and communication plan, as explained in the article. The question 'What is the purpose of this PR?' enables middle managers to initiate knowledge creation as required by Nonaka and Takeuchi (1995), but employees at all levels are allowed to initiate a PR as well.

3. The question ‘What should we do next time?’ enables the participants to create a preferred present by studying the conditions of the situation and formulating a working hypothesis by addressing the issues of what to continue, what to stop and what to start. By reasoning, the participants model solutions to the problems they previously identified. They test the applicability of the model before they proceed to the next question. The question ‘What should we do next time?’ enables the participants to create ‘truly new concepts and solutions’, as required by Engeström et al. (2013).

4. The question ‘What are we going to report from this PR?’ leads to the creation of the action and communication plan, which is the basis for implementing the solutions. This question leads to horizontal learning and includes three steps. First, the participants achieve consensus regarding the action and communication plan. Second, one or two participants deliver the action and communication plan to the sponsor. Third, the sponsor implements the plan and communicates with relevant colleagues.

5. Vertical learning is maintained by the question ‘What management challenges might be addressed as a result of this PR?’ The process of vertical learning starts when the facilitator or the leader of organizational learning discusses the management challenge with the relevant top manager, who decides how to handle it and communicates the changes; thus, new practices are being implemented and vertical learning occurs. The question ‘What management challenges might be addressed as a result of this PR?’ enables learning across organizational hierarchies, as required by Nickelsen and Elkjaer (2014).

6. Reflection on the PR itself is initiated by the question ‘What was your personal highlight from this PR?’ This enables the participants to be aware of how they benefited from participating in the PR. This question enables the participants to consider ‘a social practice’, as required by Gherardi (2012).

7. The Learning spiral is an invention inspired by the theorists mentioned in chapter 2. Nonaka and Takeuchi (1995) provided insight regarding the change of tacit knowledge to explicit knowledge. Engeström discussed historical analysis (what happened and why?), modelling new solutions (What should we do next time?), implementing a new model (What to report from this PR? (involving the sponsor)) and reflecting on the process (What was my personal highlight from this PR?). Dewey talked about drawing on participants' experiences in terms of describing the past and creating a preferred present and a favoured future. The participants in the pilot project and in PR created 'truly new concepts and solutions', as required by Engeström et al. (2013).

8. The pilot project showed that participants could be frustrated in the beginning of the AAR; therefore, Ba needs to be maintained and a trained facilitator is necessary. The pilot project led to the establishment of a PR facilitator community.

9. The division of labour in a PR is defined by three roles: 1) the participants, 2) the sponsor and 3) the facilitator. The role of top management is defined in a later iteration, which is described later in this chapter. The roles are briefly described and communicated to the organization, but the description of the role of facilitator needs more investigation and explanation. I will come back to this later in this chapter.

10. The first iteration revealed the importance of reporting PRs on a regular basis to different stakeholders.

11. The term 'conversation' evolved into 'dialogue'. I will come back to the term 'dialogue' later in this chapter.

4.3 FACILITATING PROACTIVE REVIEWS, SECOND ITERATION

This second iteration explores the role of the facilitator. From the beginning of the development of the PRs, it was clear that facilitators were needed to allow the participants to explore more widely and to maintain Ba. A caring atmosphere enables participants to establish humour and trust and to dare not to know (Wegerif, 2007). Facilitation was a 'foreign' skill in the global IT company, so facilitators needed to be trained to know how to create and maintain a caring atmosphere in which PR participants feel free to articulate concerns, provide insight and actively express contradictions (Engeström, 2001), dissent and uncertainty in a constructive way (Scott et al., 2013). This section refers to the article *Proactive Reviews: Fra personlig viden til organisatorisk læring* that was published in *Erhvervspsykologi*, *11*(4), 2013. This is the only article in Danish in this PhD project. The focus is on facilitation, what to be aware of, hints and tips.

4.3.1 PROBLEM IDENTIFICATION, SECOND ITERATION

A PR is a sensitive process in which emotions, positive and negative, are involved. The participants are under some pressure to come up with innovative solutions, and the manager focuses on the participants as s/he needs the results from the PR. The time slot of three hours sometimes increases the feeling of pressure.

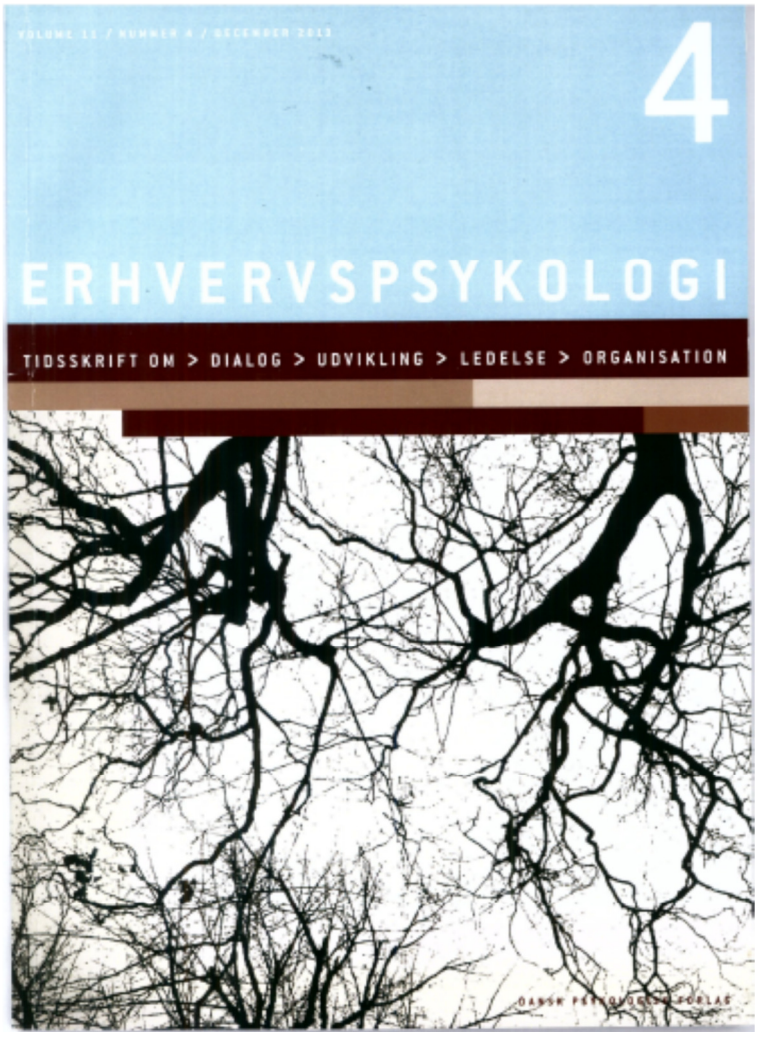
According to Paul and Dan, the pilot project served the purpose of letting them express emotions. As Dan explained: *'A benefit from the AAR is to get rid of frustration, stress etc.'* It also allowed them to be more professional. As Paul states, '*The AAR can be useful not only for understanding problems, but will help us repeat successes in the future.*' According to Janet (Russia), 'The Proactive Review made it possible for me to formulate my dreams. I am not used to that'. In this case, the PR may serve the purpose of creating a direction for personal development and motivation for achieving personal goals.

The pilot project showed that learning from experience in the context of work could also serve the purpose of getting revenge, for example, one division taking revenge on another, as expressed in this statement: '*Consulting is frustrated because Sales do not answer their questions. Sales is smiling, saying they did everything well*'. The result was '*Quarrel: Blaming, defending, shouting, smiling and nodding, big arm movements, looking to the ceiling*' (Observation notes included in the article: *Facilitating dialogue*,

researcher's notes from the PR). The facilitators were trained to avoid such an unacceptable situation.

A few facilitators were trained as a part of the pilot project in 2005. As the requirements for PRs increased in the global IT company, more facilitators were needed. The objective was to have a few facilitators in most of the countries and/or divisions in EMEA. It was decided that I should develop and run training courses for new facilitators. This was not to be a theoretical course but a very practical experience with theoretical insights. From 2006–2012, I trained 300–400 employees in more than 40 countries.

The article 'Proactive Review: Fra personlig viden til organisatorisk læring' explores the research question of 'how to facilitate the learning process in PRs'.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ERHVERVSPSYKOLOGI
TIDSSKRIFT OM > DIALOG > UDVIKLING > LEDELSE > ORGANISATION

4.3.2 THEORETICAL CONSIDERATIONS FOR MAINTAINING THE CONTEXT OF PROACTIVE REVIEW

The obligation of a facilitator is to create and maintain the context of the PR. Therefore, the facilitator needs to know the physical surroundings and the historical background of the case, and he/she must be able to deal with sociological aspects, such as organizational structure and power, rules, conversation and Ba (Nonaka & Takeuchi, 1995; Engeström, 2001; Elkjaer, 2003; Gherardi et al., 1998; von Krogh et al., 2000). Critical competences for a facilitator were motivation for running processes in divisions or other groups they did not belong to, the ability to maintain confidentiality and be someone who is held in esteem throughout the organization. A facilitator needs some maturity and influence in the organization, as well as good communication and listening skills.

The objective of the training course was to enable the participants to facilitate PRs locally in their country in all divisions. The tools consisted of the training materials that were developed over the years. The 'rules' for establishing the course included the requirements for managers and employees to participate and the obligations of the trained facilitators after the course. The PR community needed to be described as one of many communities of practice in the global IT company.

The content of the PR facilitator course should focus on the challenges of being a facilitator, for example, maintaining neutrality, creating trust and maintaining a caring atmosphere.

4.3.3 MODIFYING THE EDUCATIONAL DESIGN OF THE PR FACILITATION COURSE

In 2006, I developed and delivered the first training course in PR facilitation. The content focused on the PR process itself and on group dynamics. The training was very much 'hands on', and the participants practised being facilitators in various case studies enacted using role play. They received feedback from their peers and from me (as the trainer). This feedback included relevant theoretical inputs, such as comments about dominant/submissive behaviour; interruptions; being visible/not visible in the situation; listening skills; questioning skills; stakeholder analysis and 'good manners'.

In order to gather information about obstacles in the training situation (Collins et al., 2004), the training course finished with a PR that was followed by an anonymous on-line questionnaire sent out to the participants within a week after the training course. Both enabled the participants to offer criticism and suggest improvements. This feedback was important for the development of the course. Over the years, more content was added, for example, codes of conduct and of a new PR application. The article '*Proactive Reviews: Fra personlig viden til organisatorisk læring'* refers to the final edition of the PR facilitator course.

4.3.4 CONSIDERATIONS FOR METHODS AND DATA COLLECTION FOR FACILITATING PROACTIVE REVIEWS

The article in *Erhvervspsykologi* only provides data from a case story about a PR run on a won bid. Here, the global IT company wanted to learn from a positive experience. The article only includes very limited data that does not indicate the vast amount of data behind the development of the PR facilitator training course. I incorporated a variety of data sources to refine the PR training course, such as the feedback at the end of the course, my observations about the role plays during the course and real PRs. Discussions during the monthly PR community web conference provided me with insights into difficulties in the training that needed to be addressed. The development of the educational design of PRs made me change the training course accordingly, for example, when new questions were added to the PR or when an online application to support the process was implemented or when codes of conduct were invented.

None of these data are presented in the article in *Erhvervspsykologi*. The lack of data reduces the transparency.

My role

Again, I am both the practitioner (the trainer) and the scientist. I defined what and how to teach, and I changed the materials and the flow according to the feedback I received. Furthermore, I decided what feedback to accept and what feedback to reject. I am aware of bias.

Ethical considerations

The discussions in the training course were labelled 'confidential' in order to create a safe atmosphere for experiments. When participants were interviewed for stories on the website or in internal newsletters, they approved the stories before publication.

When I co-facilitated with new facilitators, I was very aware of trying to be as humble and as invisible as possible in order to minimize my formal and professional power. Thus, I took notes most of the time and only spoke when invited to. The facilitator and I agreed on this approach during our preparation.

4.3.5 ANALYSING THE EDUCATIONAL DESIGN OF THE PR FACILITATOR COURSE

The participants in the training course practised being facilitators during the course, and they learned it was not always easy to handle the group dynamics and the emotions in a PR. They were thus provided with suggestions about how to maintain what I would today call Ba. The participants showed confidence in facilitating as a result of the training. The role plays and the feedback sessions developed relationships, knowledge sharing and respect between the participants; they improved on the interpersonal level (Collins et al., 2004). They did not perceive themselves a 'group' per se, but most of them stayed as active members of the PR community years after finishing the course, which is an indication that they they somewhat identified themselves as being a facilitator. According to Collins et al. (2004), available resources and easy access to those resources are important; therefore, I will mention that the facilitators' PR resources grew over the years. In 2011, a webpage was available that included an agenda for the preparation with the sponsor and the co-facilitator, technical manuals for online PRs, a template for the invitation to PRs, a link to a PR application, a link to a chat forum available only for PR facilitators to support interaction within the PR community, slides for the PR meeting, a link to the PR blog that included interviews with stakeholders, new developments of the educational design, etc.

4.3.6 UTILIZING THE VARIABLES

The purpose of the PR facilitator training course was to improve the *professional development* of PR facilitators (Collins et al., 2004). More *climate variables* (Collins, 2010) came into play in the training course as the participants engaged and cooperated intensively during the two days of training. They surprised me by the risks they dared to take when they performed the role plays and when they gave feedback. Very often they included their concerns about being the facilitator in that particular situation. The *outcome variables* (Collins, 2010) included knowing about

facilitating PRs, the acquisition of the skills to handle group dynamics such as power and oppression, the ability to initiate and maintain PRs locally and learning strategies, including getting started 'out there' and participating in the PR community for further professional development.

4.3.7 HOW STAKEHOLDERS AND THE RESEARCHER WORKED TOGETHER IN THE SECOND ITERATION

I worked together with the participants during the training course and sometimes as co-facilitator in their first PR (which enabled me to observe). I was also the leader of the PR community. Sometimes a facilitator asked me for a debriefing after a tough PR. I collaborated closely with some of them during the seven years I was the Manager of Organizational Learning, EMEA.

4.3.8 REPORTING ON THE DEVELOPMENT OF THE PR FACILITATOR COURSE

Normally, the development of the PR facilitator course was not reported, except for major developments that were announced at the PR community web conference. Additionally, upcoming courses and the number of facilitators needed were published on the PR website.

External reports on facilitating PRs are to be found in the article *Proactive Reviews* found in *Erhvervspsykologi, 11*(4), 2013 and in the book *Proactive Review – how to make your organization learn from experience*, BoD 2012.

4.3.9 CONCLUSIONS ON FACILITATING PROACTIVE REVIEWS

The pilot project and the first PRs revealed the need for trained facilitators. The objective of the PR facilitator course was to produce skilled PR facilitators. The 'students' were employees with some seniority and the ability to maintain confidentiality, and they were held in esteem in their division. The article describes ideal requirements for a facilitator and includes the following insights and inventions:

1) Requirements of strong listening and communication skills, solid timekeeping and the ability to establish and maintain an atmosphere characterized by care and trust.

2) Insights into group dynamics and the ability to handle the context in regards to the physical surroundings where the participants ideally should sit pleasantly and have the ability to stand up, handle power and dominance between the participants, have awareness of the organizational structure and division of labour and be knowledgeable about the channels of communication.

3) Knowing when to be dominating (visible) and when to be silent (invisible) and the ability to go into both modes.

4) The initial rules for PR are 'we are here to learn'; thus, there is no guilt to be addressed, the PR is confidential and everybody in the PR contributes.

5) The facilitator must prepare the PR with the sponsor in order to gain insight about the historical background and important social aspects of the issue to be resolved in the PR.

6) The necessity of preparing with the sponsor and a co-facilitator (if available).

7) The article revealed the following dilemmas when facilitating:
    a. When the PR turns tense, when should the facilitator be dominant and when should the facilitator remain silent?
    b. When preparing with the sponsor, how should sufficient insight be acquired while maintaining distance?
    c. Knowing the topic inside out, how can the facilitator remain neutral and avoid revealing an opinion?
8) PRs may be based on positive experiences, which contradicts Engeström, Nonaka and Takeuchi and Dewey, who make the starting point of their spirals a contradiction, a problem or a disturbance. I will come back to this in section 4.5 and 4.6 and in chapter 5.

4.4 PREREQUISITES FOR DIALOGUE AS THE BASIS FOR PROACTIVE REVIEW, THIRD ITERATION

Engeström (2001), Senge (1999), Nonaka and Takeuchi (1995) and the AAR (U.S. Army, 1993, p. ii) indicated that conversation between the participants should be the backbone of learning processes. I was naïve enough to presume that everybody has the same understanding of 'conversation', but the experiences of the PR community members and facilitating several PRs taught me I was wrong. I had to be clearer about the obstacles to and enablers of conversations, and I soon realized the word 'conversation' did not cover my intentions, namely a mutual exchange of thoughts. Engeström and Nonaka and Takeuchi use the words conversation and dialogue interchangeably, whereas Senge (1999) referred to Bohm when he explored conversation as the means for learning in the context of work.

This PhD study made me consider what it would take to implement PR in other high-tech organizations classified as big business, and I visualized what I would focus on if I was hired to implement PR in another company. The article *Prerequisites for dialogue as the basis for learning in the context of work* is an attempt to describe what it would take to make dialogue the driver of learning in the context of work. I wrote this article in collaboration with Professor Jane McKenzie of the Henley Business School in the UK.

4.4.1 PROBLEM IDENTIFICATION IN THE THIRD ITERATION

PRs took off, and I facilitated a number of very different cases. The PR community discussed experience and we realized that sometimes we could not create a safe atmosphere where the participants had the courage to be wrong, to make mistakes and to discuss disagreements. As this was the point of a PR, I needed to find out what was missing and what was needed to initiate and maintain rich conversations. The research question in this iteration is how to transform conversations into dialogues in PRs.

4.4.2 THEORETICAL CONSIDERATIONS FOR DIALOGUE

In the initial development of PR, Senge's (1999) referral to Bohm (2014) was food for thought as Bohm described the term 'dialogue' in detail. I compared Bohm's description with the descriptions of AAR (U.S. Army, 1993; Darling et al., 2005) and I claimed that the backbone of PRs was dialogue where the participants contribute on equal terms.

The article *Prerequisites for dialogue*…builds on a number of sources, some of which are based in different parts of the philosophy of science but were included for the relevance of their discussions. The literature review made us identify five prerequisites for dialogues in the context of work (i.e. organizations): participants' equality, empowerment of the participants, trust, a caring atmosphere and learning to be legitimized in the strategy.

The article describes dialogue as a unique type of conversation. Dialogue is a collaborative investigation in which the participants contribute on equal terms, listening to and building on each other's inputs in order to move beyond differences. Here, in my reflections on the article, I will draw on the work of Louise Philips (2011), who discusses the term 'dialogue' from a communication point of view. She describes dialogue as

> '*communication processes as sites of meaning making that are fundamental to human life and culture, multi-dimensional, emergent, dynamic and context-dependent'* (p. 25).

She is critical of the pre-assumption of dialogue being of positive value. She questions whether *'dialogue is a self-evidently positive, power-free space for communication among equals...'* and she criticizes the view of dialogue as being democratic in contrast to hierarchical, undemocratic or top-down. She gives examples of dialogues that are not 'powerless', for example, an interview situation that is not a dominance-free space for interaction (Phillips, 2011, p. 12). Phillips argues that Bohm perceives dialogue as a behaviour of speaking and listening that may lead to organizational changes, whereas dialogue could also be seen as central for human social life because it enables humans to create and maintain relational meaning-making (Phillips, 2011, p. 29). This is interesting because this PhD study focuses on dialogue in the context of work, whereas Phillips broadens the scope of dialogue to human life. This means that the ability to participate in dialogue may be described by parameters discussed in the article, which are 'equality', 'empowerment', 'trust and relationships' and 'learning across the organization'. However, there may be much

more to this, as the participants in PRs may have or may not have created and maintained relational meaning-making.

4.4.3 MODIFYING THE EDUCATIONAL DESIGN OF PROACTIVE REVIEW, VERSION 3

The five prerequisites for dialogues in PRs led to the development of a code of conduct that employees at all levels were obliged to follow and a list of organizational requirements for starting and maintaining rich dialogues in PRs, not only in this global IT company but in big businesses in general. The downside of my position today is that I cannot implement this modified design in the global IT company. The upsides are first that I got the chance to face mysteries and try to solve them and second that this improved educational design may contribute to the understanding of learning in the context of work, not only in the global IT company but for practitioners and scientists in the field.

4.4.4 CONSIDERATIONS FOR METHODS AND DATA COLLECTION IN THIS THIRD ITERATION

To minimize the bias, I utilized mixed methods, both quantitative and qualitative this time.

Quantitative data was taken from the Organizational Learning Annual Report from Fiscal Year (FY)10, FY11 and FY12. The qualitative method consisted of the first person perspective covering unsolicited feedback from two end users that came from two regions covering two divisions and two organizational levels (senior vice president and senior employee). The second person perspective includes interviews with sales staff at three organizational levels. The third person perspective stems from observations of PRs across three regions. The cases are chosen because they illustrate important obstacles to and enablers of dialogue as the foundation for learning in the context of work, not only in one country, one region or one division but in four regions, four divisions and in various hierarchical levels.

Table 7. Data collection, iteration 3, prerequisites for dialogue

Perspective	Data source	Number
First person	Diaries	1
	Unsolicited feedback	2
Second person	Interview	3
Third person	Observation	3
Quantitative data	Annual reports for org. learning	3

In the article, we refer to 'triangulation'. Today, I prefer the term mixed methods in order to stress the mainly qualitative approach. The data was gathered over a period of seven years, which may be an issue because the focus of learning in the context of work changed from the pilot in 2005 to be 'a part of the organizational DNA', as a senior vice president put it. The participants changed their focus over the years, which became clear in the suggestions for improvement delivered in the diary from the pilot to the interview with Janet about a positive case seven years later. Janet focuses on the results of the PR rather than on the educational design. However, the data and the theoretical considerations resulted in important insights.

My role

I was involved in the data gathering as I asked for the feedback. I was the interviewer and I observed the PRs. I hope I am transparent in my intentions; my aim was to improve the educational design of PRs, which was clear to my colleagues. The interviewees were at my organizational level or higher, so they should not need to please me. The observation was an integrated part of being a facilitator, and some of the observations were made while co-facilitating. The main facilitator and I discussed my notes afterwards. Some of the observations we presented to the PR community. Thus, the notes were discussed with fellow facilitators.

Ethical considerations

All personal names have been changed in the article in order to guarantee the anonymity of the people I studied. The regions and the divisions are original. We did not ask for consent before discussing our observations in the PR community because at the time of making the observations I was not aware of the

requirement of consent and because the participants knew we tried to learn from every PR. In any event, the facilitators always maintained confidentiality and never revealed who said what. The focus was on the situation and not on the participants.

4.4.5 ANALYSING THE EDUCATIONAL DESIGN

In this article, we specifically focused on the group level, that is, the group dynamics in various PRs and the institutional level or the stakeholders' engagement and support. Building on the theories, we have pointed out situations and citations to identify possible solutions to the obstacles to dialogues in PRs.

4.4.6 UTILIZING THE VARIABLES

It was important for us that the data could be 'representative'; therefore, we gathered data from various regions and divisions. I put 'representative' in quotes because this term refers to samples in quantitative research. I am sure the data are not representative in this sense, as the numbers are far too small. The data were 'representative' because they came from various sources and because they enabled us to acquire insight about obstacles to dialogue when applied to learning from experience in the context of work. In the article, we analyse the variable called *setting* as it unfolds in the global IT company. We have also looked into the *nature of the learners* as we purposely acquired data from four divisions. Finally, we examined the participants' engagement, cooperation, risk taking and efforts to understand others' points of view, which are categorized as *climate variables* according to Collins (2010).

4.4.7 HOW THE STAKEHOLDERS AND THE RESEARCHER WORKED TOGETHER IN THIS THIRD ITERATION

In this article, I perceive Professor Jane McKenzie as the researcher and myself as the practitioner. We met face to face and agreed on the topic and on how to collaborate. I came up with a proposal that Jane reviewed and sent back, along with relevant articles and suggestions for further reading. I revised the text several times and sent the new proposals, which took me on a voyage I had not expected. This included intellectual challenges and frustrations, which are necessary for learning. In the collaboration, I perceive Jane as the master and myself as her apprentice.

4.4.8 REPORTING ON DIALOGUE AS THE FOUNDATION FOR PROACTIVE REVIEW

The first codes of conduct were developed in 2006 while the PR facilitation course was being developed and delivered. The initial codes of conduct are presented in the article 'Facilitating Proactive Review'. In the global IT company, the statement 'dialogue is the backbone of Proactive Reviews' and the initial codes of conduct were publicized in as many ways as possible—in internal newsletters, in the Organizational Learning blog, in the PR community web conference, as an integrated part of the facilitators' training course, as a part of the invitation for a PR and as an integrated part of the agenda for preparation with the sponsor.

The external reporting of the codes of conduct developed in this article is twofold. First, the codes of conduct are to be published in the article. Second, the codes of conduct are presented here in this PhD thesis. The article was sent to *The Journal of Business Management* and is currently under review.

4.4.9 CONCLUSIONS ON PREREQUISITES FOR DIALOGUE AS THE BASIS FOR PROACTIVE REVIEW, THIRD ITERATION

The experiences of the PR community, my observations and my reflections during this PhD study led to the consideration of how to change conversations into dialogues in PRs. The article includes theoretical reflections on the terms conversation and dialogue that lead to the development of codes of conducts for PR. The empirical study focuses on obstacles to creating equality for the participants, participant empowerment, establishing trust and building relationships and spreading learning across the organization, leading to a suggestion for organizational requirements to implement PR in an organization. The article includes the following inventions:

1) Clarification of the terms conversation and dialogue when used as the foundation for learning in the context of work.

2) Identification of important enablers of and obstacles to dialogues in the context of work.

3) The development of codes of conducts for dialogue when used as the foundation for learning in the context of work. The codes of conduct support Ba (trust and care) and social interaction in order to initiate and maintain dialogue. The codes of conduct may be perceived as the rules of a PR. Internalizing and maintaining the codes of conduct make the facilitators more skilled practitioners who know about powerful obstacles and how to retain important stakeholders. The facilitators are familiar with enablers like confidentiality, respect for peer participants and the learning purposes of a PR. The stakeholders are aware of obstacles like power, dominance and guilt. One purpose of the codes of conduct is to sustain the participants' improvement of products, services or work practices.

4) Identification of organizational requirements for PRs in high-tech organizations classified as big business. The list of organizational requirements may be perceived as a tool to help top management plan and implement PRs. The top management may improve in terms of being skilled practitioners when utilizing these organizational requirements and PR for learning from experience in the context of work, as this educational design includes historical and sociological aspects and enables employees at all levels to contribute to the preferred present and a favoured future.

5) The interviews with the Senior Vice President of Sales EMEA and the Sales Manager Eastern Europe are two examples of PRs run on cases perceived as positive. The PRs were run in order to learn from positive experiences. The empirical data from this study shows that the spiral may start with a positive experience.

6) The Senior Vice President of Sales EMEA utilized a PR to develop a strategy for 100% growth in his area. In this case, the participants do not only learn from the past, they utilize their experience to imagine what is to come. This is an example of PR being utilized to explore the unknown and plan for a favoured future.

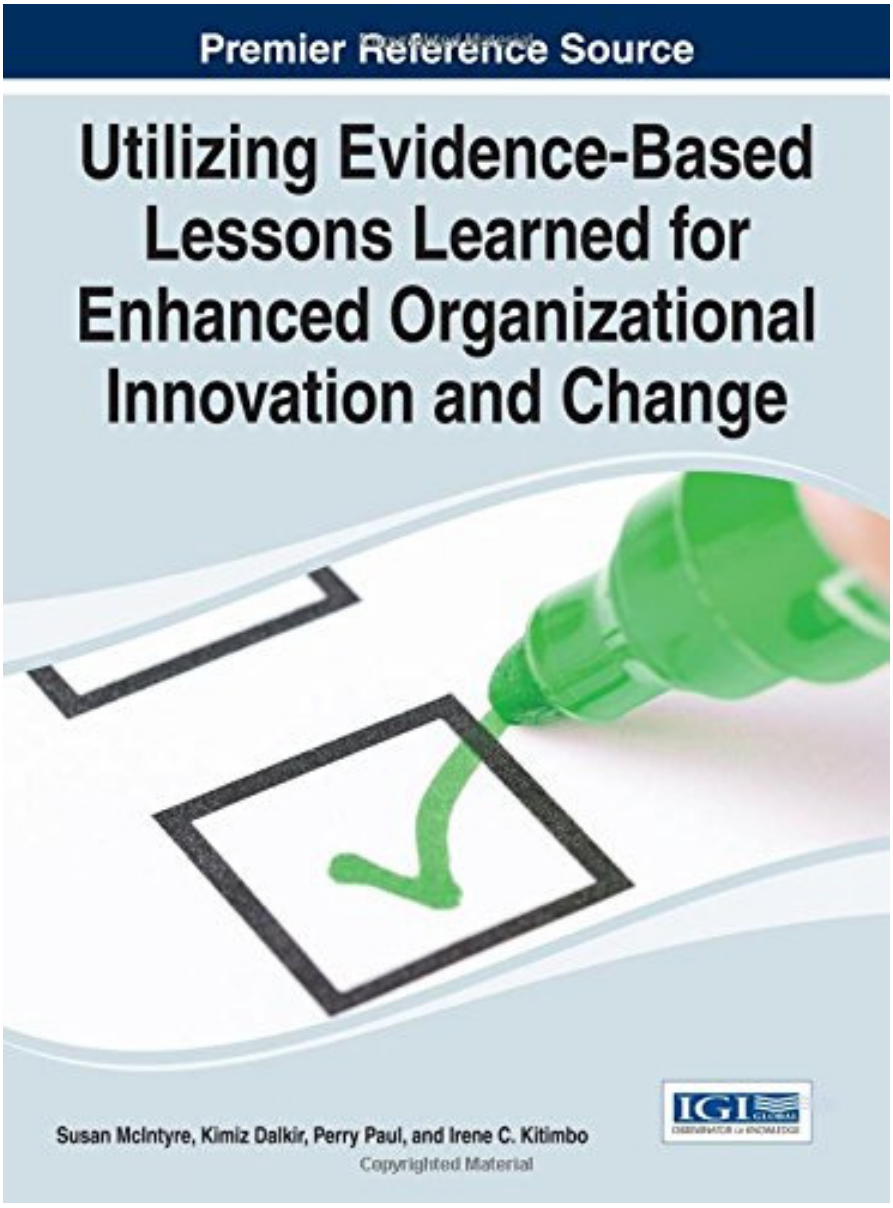
4.5 PROACTIVE REVIEW APPLIED TO LESSONS LEARNED, FOURTH ITERATION

In the summer of 2013, I was invited to write a chapter for the book *Utilizing evidence-based lessons learned for enhanced organizational innovation and change,* publiched by IGI in 2014. This gave me the opportunity to think through how PR could be applied to 'lessons learned', which is a well-known tool to learn from experience in IT projects. Lessons learned critically analyse potential failures or mishaps in order to avoid them in the future by improving working processes or techniques. Lessons learned are based on both positive and negative experiences. I realized that PR applied to lessons learned might call for additional theory about learning in teams. Initially, I wanted to come up with recommendations for successful PR based on defined obstacles and enablers. Later, during this PhD study, I realized that this chapter delivers much more than that.

4.5.1 PROBLEM IDENTIFICATION IN THE FOURTH ITERATION

> *'A lesson learned is knowledge or understanding gained by experience. The experience may be positive, as in a successful test or mission, or negative, as in a mishap or failure.'* (East, 1998, p. 14).

A lesson learned could be run on a positive as well as on a negative case, in contrast to the starting point of the spirals described by Nonaka and Takeuchi (1995), Engeström (2001) and Dewey (1976). When invited to write a chapter for the book, I needed to shift my perspective from the global IT company and consider whether the PR would be useful as an educational design for the more generic 'lessons learned' in other organizational settings. The research question could be 'What may we learn from PR applied to lessons learned?'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4.5.2 THEORETICAL CONSIDERATIONS FOR LEARNING IN TEAMS

In order to apply PR to lessons learned, I needed to be more specific in regards to learning in teams. Here, I draw on Engeström's discussion of Gregory Bateson (Engeström, 2001) to investigate the term 'learning', and I draw on Etienne Wenger's work on communities in practice in order to understand group dynamics in project teams.

Today, I realize that Bateson's view on learning is individualistic in contrast to my perception of learning as being a social activity. Bateson inspired me because the four learning classes enabled me to explain the main differences between collaborative learning from experience in PR and learning from the online courses provided to employees in the global IT company while I was still the Manager of Organizational Learning, EMEA (this is not discussed in the chapter). During this PhD study, I have learned about the four ontological dimensions; Bateson focuses only on individual learning whereas I am interested in all four dimensions. Furthermore, Bateson's four classes are somehow linear, whereas my perception of learning is a spiral. The upside of the four learning classes was (again) to explain why PR may lead to 'more learning', that is, a higher/deeper learning than that obtained via an online course. So from a practice-based approach, where the development of PR took its departure, Bateson seems to contribute to the understanding of learning (also in the context of work). But my learning through this PhD study has brought me to another understanding of learning. I now see learning as a spiral in which the learner comes back to the same point bringing more experience, which Bateson does not seem to take into account.

Engeström also inspired me to study Vygotsky, and I found the theory of zone of proximal development meaningful, especially in regards to PR where the starting point is something the participants know because they have experienced it. Vygotsky's thinking could be perceived as based in Marxism, and Bateson's 'stimulus-response' approach may be perceived as behaviouristic. What I see here is that Engeström utilizes theories of different orientations to support his work, and I question how these different points of departure in the philosophy of science interplay, but I have not found a thorough explanation by Engeström.

Wenger (1998) describes informal network of peers and calls such a network a community of practice (CoP). The participants in a CoP share issues, and they interact on an ongoing basis to achieve results. The purpose of the CoP is to solve problems or as

Wenger put it, participation in a CoP '*generates specific perspectives and terms to enable accomplishing what needs to be done*' (Wenger, 1998, p. 46). He claims that CoP are '*the social fabric of learning*' (Wenger, 1998, p. 251) that enable the organization to learn in the context of work and embrace the practices necessary for doing the job. Wenger may be positioned in social constructivism because the social practices in CoPs are formed by interaction and social processing, such as establishing a shared repertoire.

At the end of the chapter I write about '*what knowledge is needed to get there*', which indicates knowledge is a commodity, something that can be described and achieved. Here we have an example showing that

> '*learners are social beings that construct their understanding and learn from participation in practice within a specific socio-cultural setting of an organization*' (Elkjaer, 2003, p. 29).

I am the learner who constructs an understanding and learns from participating in practice, a practice that changed from the global IT company to the university and from a mode of execution to a mode of reflection. This kappa includes numerous reflections, and today I am not pleased with the phrase '*what knowledge is needed to get there*'. Today, I have a different point of view; the action and communication plan shows what needs to be done, that is, the actions and the knowing required to achieve what is needed.

The case story presents a context very different from the contexts of the other PRs described and from other contexts I have experienced. According to Gherardi et al.

> '*The context must (…) be conceived as a historical and social product which is co-produced together with the activity it supports: agents, objects, activities, and material and symbolic artefacts all constitute a heterogeneous system that evolves over time*' (Gherardi et al., 1998, p. 275).

The 'agents' in this context are both employees of the global IT company and 'foreigners'. The object is still to learn from experience, but the implicit object is to improve the collaboration between the two organizations, which is a new object in regards to PRs. The activities are basically the same: collaboration around the seven questions, but additionally the activities included lunching together. The agenda may be seen as a symbolic artefact that was hung up in a public restaurant, very unlike the usual procedure where confidentiality is maintained.

The model of 'the ripple effect' illustrates that the PR had the strongest impact on the participants but also that the PR provides a process for spreading new knowing, experiences and solutions to wider parts of the organization and even to other organizations. The participants are in the centre of the concentric circles. This position makes them an integrated part of the other circles: team, cross team, organization and inter-organization. The concentric circles show the connection between four ontological dimensions—individual learning, team learning, horizontal organizational learning (the learning between colleagues), vertical organizational learning (new inventions implemented top-down as a result of the management challenges addressed) and inter-organizational learning. Here, the distinction between horizontal and vertical organizational learning is explicit, and the inter-organizational dimension is added to the three ontological dimensions described earlier in the chapter *Discussing mapping the research field*. The model shows that the ontological dimensions of learning are completely interwoven.

4.5.3 MODIFYING THE EDUCATIONAL DESIGN OF PROACTIVE REVIEW APPLIED TO LESSONS LEARNED

In the previous articles, I only described *three* roles in a PR—participant, sponsor and facilitator. Here, there is an additional role, namely the top management, who receives and reacts to the management challenges addressed. I realized this fourth role when I used Van Winkelen and McKenzie's (2011) model of nested levels of learning in an organization. If PRs are to be implemented in other organizations, it is important to be aware of all four roles in order to achieve commitment and engagement throughout the organization.

This iteration provides recommendations for the prerequisites for initiating and maintaining PRs, including the requirements for the four roles. These prerequisites are inspired by the conditions for enabling rich dialogues in the context of work.

4.5.4 CONSIDERATIONS FOR METHODS AND DATA COLLECTION IN THE FOURTH ITERATION

For several years, I wanted to test PR in the context of inter-organizational learning. In 2012, I got an opportunity to facilitate a PR with participants from two high-tech organizations classified as

big business, one of them being the company where I was employed.

When invited to write the chapter in *Utilizing evidence-based lessons learned for enhanced organizational innovation and change*, I took the liberty of using the experience from the inter-organizational PR to illustrate how the educational design of PR could be applied to lessons learned.

The physical surroundings of this PR are very different from a meeting room, and this PR may be perceived as a study of a critical case that challenged and changed my assumptions about the 'right' setting for a PR (Flyvbjerg, 2006, p. 231).

My role

Informal conversations with the manager of the X program allowed me to get insight about his concrete, context-dependent experience of cooperation with a customer. I was eager to learn from him and from this particular PR because I wanted to develop PRs to include external parties, such as customers and partners, and I presumed there would be obstacles to be aware of. When a restaurant was suggested as the setting, I was sceptical; but I accepted it and did not go into the expert role telling the facilitator and sponsor what to do. We found that it worked just fine.

I wanted the co-facilitator to do the interview with the sponsor and the participants from the global IT company, but as she did not feel qualified, I conducted the interview. The publication of the interview was important to understand the potential of PRs as it was an example of applying PR for inter-organizational learning. Neither the PR nor the interviews revealed difficulties with external participants. Somehow the PR with external parties was 'too smooth' and they were 'too happy and too polite' compared with the dozens of PRs I have observed or conducted. It worked out fine in the sense that all participants and the sponsor were content; but perhaps the PR was too superficial, or using Bateson's terminology, perhaps the outcome was only 'realizing'. Again, I may be perceived as a totally biased researcher wearing too many hats at the same time, but on the other hand,

> *'context-dependent knowledge and experience are at the very heart of expert activity'*, according to Flyvbjerg (2006, p. 222).

Ethical considerations

The interview was published in an internal newsletter after being corrected and approved by the two interviewees; thus, informed consent was implicitly given. Here, the names of the participants

and the name of the program are changed in order to provide anonymity. The confidentiality of the PR was spoiled by having 'strangers' around, very unlike a traditional setting. Perhaps the PR was affected by this fact or perhaps because I was there as the Manager of Organizational Learning. Both facts could have caused both the internal and the external participants to come off as 'good guys'. Perhaps I helped things to go from bad to worse by doing and publishing the interview. Furthermore, I was keen to build a close relationship with this sponsor because he could be my counterpart for developing PR to include inter-organizational learning in the future. This might have been an unconscious reason for allowing the special setting.

4.5.5 ANALYSING AN EDUCATIONAL DESIGN FOR LESSONS LEARNED

In this iteration, I looked for the *group dynamics* between internal and external participants, and it seemed like there was no domination or lack of participation in the group. The participants changed their understanding of how to proceed with the collaboration between the two organizations.

4.5.6 UTILIZING THE VARIABLES

The resources were different from 'normal' PRs as the agenda was put on the wall in a restaurant where it was visible to everybody there. The participants were eager to understand the *others' points of view*, and they *engaged* in the PR. I think the action and communication plan indicates they developed *a learning strategy;* at least they initiated changes in both organizations. The *financial requirements* for the PR were covered by the global IT company, and the changes they decided on may have required financial support.

4.5.7 HOW THE STAKEHOLDERS AND RESEARCHER WORKED TOGETHER IN THE FOURTH ITERATION

The facilitator asked me to co-facilitate because she found it difficult to manage a situation with external participants. We prepared together and had a rich debriefing where we discussed the impact of the setting. The sponsor initiated informal conversations with me several times before and after the PR. By doing so he supported the PRs with external parties, not only in this case but for more cases to come.

4.5.8 REPORTING ON THE PREREQUISITES FOR PROACTIVE REVIEW

This case was reported in an internal newsletter and the facilitator (not me) started a discussion about the setting of this case on a PR community web conference. Externally, this iteration is published in the book *Evidence-Based Lessons Learned for Organizational Innovation and Change*, published by IGI in 2014.

4.5.9 CONCLUSIONS ON PROACTIVE REVIEW APPLIED TO LESSONS LEARNED, FOURTH ITERATION

Applying PRs to lessons learned made me draw on the work of Bateson (1972) and Wenger (1998) in order to focus on learning in the context of work only for the ontological dimension of the team. The chapter builds on a case study of a PR of inter-organizational collaboration. The chapter includes the following inventions:

1) A PR includes four roles (not, as described earlier, only three roles). All four roles are necessary to make the organization learn through PRs or, in Engeström's words, to make the subject (the organization) achieve the object (the learning).

2) A description of the four roles in a PR is a description of the division of labour in the educational design.

3) The results of a PR are both tangible and intangible; both types are explained. The tangible results may be improved products, services or work practices, and whereas the intangible results may be improved relations between the participants.

4) A presentation of important enablers and obstacles for initiating and maintaining PR for learning from experience in the context of work. The obstacles may slow down the move in the spiral of a PR, whereas the enablers may increase the learning.

5) A PR embraces not only three but four ontological dimensions—individual learning, team learning, organizational learning (both vertical and horizontal) and inter-organizational learning.

4.6 ON-LINE PROACTIVE REVIEW, FIFTH ITERATION

When the global IT company changed from a multinational company to a global organization during the period 2005–2010, the employees changed from working locally to working across geographies. It then became necessary to run PRs online to save time and money. I gathered a small taskforce of very experienced facilitators to develop an educational design for online PRs and arranged for additional facilitator training. The members of the taskforce contributed on a voluntary basis on the top of their everyday jobs. Only one member (besides me) joined as an employee in the Department of Organizational Learning. The paper *Online Proactive Reviews* was presented at the OLKC Conference in Oslo in April 2014.

4.6.1 PROBLEM IDENTIFICATION IN ONLINE PROACTIVE REVIEW

The design of the PR proved its sustainability when the participants met face to face. The PR community had discussed challenges in facilitating, especially the importance of creating trust and a caring atmosphere. Now the PR was going to work online with geographically dispersed participants. The technology at the time did not allow for videoconferences, so the communication would not include live pictures of the participants. This was perceived as a challenge when developing the educational design for online PR.

The paper discusses the research question of 'how to improve learning and innovation in the context of work when collaborating online?' Because this research question does not look into innovation, either from a theoretical or a methodological point of view, I would prefer an alternative research question, namely what should be considered when moving PRs from a face-to-face setting to an online setting.

ONLINE PROACTIVE REVIEWS

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Abstract

The aim of this study is to explore online, collaborative learning when it takes place in the context of work. The study is based on an educational design of collaborative learning called Proactive Reviews (PR). A PR is the point of departure for an organisational learning process involving circuits of learning and knowledge creation including the past, the present and the future. The research question is how to improve learning and innovation in the context of work when collaborating online.

Keywords
Organisational learning, CSCL, learning spiral, online collaboration, design-based research

Organisational Learning

Why bother about organisational learning? Nonaka and Takeuchi (1995) claimed that the ability to learn at all levels in Japanese organisations increased their competitiveness with American companies. According to Pålshaugen (2000), companies need to increase productivity in order to survive in a competitive environment. How to increase productivity is quite an open question, but an answer may be to do things differently and to do them quickly in order to increase competitive advantages. Improvements in technology and working processes may be seen as innovation (Pålshaugen 2000).

The competitive advantage may be achieved when an organisation creates new knowledge, disseminates it throughout the organisation and embodies it in products, services and systems (Nonaka & Takeuchi 1995) as well as work processes (Elkjaer 2003). Learning in organisations may be seen as a continuous process of development in which the individuals and the organisations interact and the learning embraces work practice (Elkjaer 2003) and leads to changes in cognition and behaviour (Vera & Crossan 2000).

It is critical that learning is integrated into the strategy of the organisation to ensure a positive impact of the learning efforts (Nonaka & Takeuchi 1995, Vera & Crossan 2000).

As an organisation cannot create knowledge on its own, its individuals need to be involved (Nonaka & Takeuchi 1995). All kinds of workers have the ability to contribute; consequently, it may be beneficial to invite them to participate in processes that generate learning and innovation (Pålshaugen 2000; Elkjaer 2003).

A circuit of knowledge appears when somebody runs into a problem: the employee will use his or her *experience* that includes thinking, knowledge, sensations, emotions and intuition. Furthermore, the employee will utilise reflection to solve the problem, which gives new experience and new insights—the employee learns (Elkjaer 2003).

All of the theorists above agree that learning is created through social interaction between the employees. None of these theorists provide suggestions for the organisational learning processes, but Nonaka and Takeuchi (1995) base their research into learning in the context of work on Polanyi's 'tacit' and 'explicit' knowledge. Tacit knowledge is personal and context-specific, embodied in a way that makes it difficult to communicate. Explicit knowledge is to be communicated. Consequently, it is very important to utilise tacit knowledge, and conversation is the means for making the tacit knowledge explicit. The terms 'conversation' and 'dialogue' are often used interchangeably (Nonaka & Takeuchi 1995). However, the term 'dialogue' should be specified when used for learning in the work context.

According to Bohm, the process of dialogue includes sharing points of view that lead to the creation of something new; the result of dialogue is changes in the participants' minds and behaviour (Bohm 1996).

Equality is a prerequisite for dialogue, meaning that everybody has a say, and everybody contributes on an equal basis (Bohm 1996).

When the participants in dialogues are supposed to share experience, exchange points of view and explore unknown areas, a caring *atmosphere* is needed (Von Krogh 2005).

The participants should be able to *trust* others, at least to some extent (Bohm 1996). Trust enables the participants to be brave enough 'not to know' (Wegerif 2007), and to change point of view in order to change opinion and behaviour (Von Krogh et al. 2000).

Online collaboration and learning

Questions of online collaboration and learning are dealt with in the tradition of computer-supported collaborative learning (CSCL). The CSCL tradition is a problem-driven, multidisciplinary field that deals with how people can learn together, supported by computers. Focus is not necessarily on the technology as a learning tool itself, but rather on how interactions and dialogic learning among students may be facilitated by technology (Wegerif 2007).

In the development of CSCL, technology allowed designers new means of influencing the complex interactions of collaboration and learning as well as allowing researchers ways of studying them (Stahl et al. 2006). Hoadley (2010) sees such a combination of

designing, studying, and redesigning processes as leading on to the tradition of design-based research (Hoadley 2010).

Proactive Review

Proactive Review (PR) is an established method for organisational learning, developed from 2005 to 2012 in a world-class IT company and employed in that organisation in Europe, Middle East and Africa (EMEA). In 2005, the top management initiated the development of a process to learn from experience in order to improve competitive advantages. The process ought to be simple and applicable to all lines of business in all countries in EMEA. When PR was developed, it became an integrated part of a three-year strategy, and new requirements grew, for example, running PR online. This paper will investigate how PRs may be conducted online with the purpose of improving collaborative learning and innovation in the context of work.

Proactive Review is a process for employees to learn and innovate in a competitive environment. PR is based on the participants' individual experiences and collaborative idea generation, and it is an inexpensive, simple, and systematic process that enables the participants to discuss a shared past and create an improved future. The participants in a PR have solved a task together, a manager has asked them to learn from the experience or to solve an issue and a trained facilitator leads the participants through seven open questions within a given time slot, normally three hours. Collaboratively, the participants create a common understanding of the past, innovate solutions to issues they have identified and decide what to act upon and how. A PR may involve employees at any level to develop products, services, systems or work processes (Nonaka & Takeuchi 1995; Elkjaer 2003).

The backbone of PR is dialogue between the participants. The dialogue is initiated and maintained by seven open questions asked in a specific sequence (Kolbaek 2012):

Agenda of a PR

1. What is the purpose of this PR?
2. What was our goal?
3. What happened and why?
4. What should we do next time?
5. What should we report, to whom, when, and how?
6. What management challenge might be addressed from this PR?
7. What was your personal highlight from this PR?

A Proactive Review includes four roles. The sponsor initiates the Proactive Review and follows up on the results of the PR. The participants in the PR have solved a task together. The trained facilitator conducts the PR, keeping the time, maintaining the caring atmosphere and leading the participants through the seven questions. The top

management decides upon organisational changes caused by the identified management challenges. An online PR may also have a technical facilitator to maintain the technology.

The Organisational Learning Spiral

The Proactive Review includes circuits of knowledge. When a manager becomes aware of the need for learning from experience, he may initiate a Proactive Review. He knows the result produces requirements for changes, but he does not know *what* changes—those are new knowledge.

The participants in the Proactive Review have solved a task together. By doing the job, they have thought, sensed, felt and probably used their intuition—in other words, they have developed experience (Elkjaer 2003). The invitation for the Proactive Review asks the participants to consider obstacles and enablers that led to the result achieved, whether good or not. This initiates individual reflections of the past.

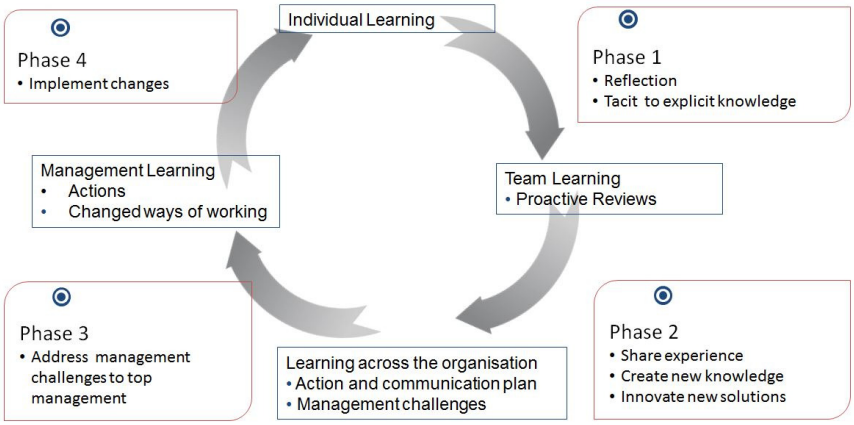

Figure 1. *The organisational learning spiral (Kolbaek 2012)*

In figure 1, the squares show the learning in different areas of the organisation. The phases show the activities that lead to learning at the next level. The flow in the learning spiral is generated by dialogue.

Phase 1: The individual employee experiences and shares the way of doing things while solving a task collaboratively with colleagues. Through the collaboration, socialisation takes place, and the knowledge may be tacit or explicit (Nonaka & Takeuchi 1996). The learning spiral calls this 'individual learning'. When the participants prepare for the Proactive Review, they reflect on the experience of solving the task, and the Proactive Review gives them the opportunity to formulate enablers and obstacles for achieving the task. According to Nonaka and Takeuchi, the employees externalise some of the individual knowledge, making some of the tacit knowledge explicit.

Phase 2: Sharing the experience, the participants mix their individual knowledge, and the dialogue leads to a common understanding of the past—what was good and what needs improvement according to the question, 'What happened and why?' The circuit of learning continues from the focus on the past to a focus on the future in the question, 'What should we do next time?' The participants mix new knowledge with 'old knowledge' such as expertise and experience, to create solutions to the problems identified. The dialogue in the PR makes the participants share their explicit knowledge (Nonaka & Takeuchi 1996). This is an innovative process where the participants suggest changes in order to develop products, services, systems or work processes. The tangible results of the Proactive Review are action and communication plans and one or two management challenges (Kolbaek 2012).

Phase 3: The management challenges are addressed to the top management. If the content of the management challenge is new to the top manager, the circuit of knowledge may be said to be continuing from the participants in the PR upwards in the organisation to the top manager, who learns about an issue that he is required to solve. This is a starting point for organisational changes and development, as the top manager decides how to solve the management challenge. The solution may involve changed work processes, improved services, changed systems or new products. Sometimes the top management decides to reorganise or to develop internal policies because of the addressed management challenges. In these cases, the Proactive Review affects internal politics or power in the organisation.

Phase 4: The changes and developments need to be communicated and implemented in the organisation. The circuit of learning continues from the top management to the employees, and the spiral starts over. This organisational spiral ensures that the learning from the single Proactive Review is spread to relevant persons in the organisation and that issues are addressed to management, who decides and implements the necessary changes (Kolbaek 2012). The employees need to internalise the new processes, services, systems or products in order to align with the organisational requirements—they make the explicit knowledge tacit (Nonaka & Takeuchi 1995). The Proactive Review initiates a learning spiral that ensures that individual knowledge expands to organisational learning.

Suggestions for Technology to Mediate Online PR

Above we covered the theory behind Proactive Reviews. Now the focus will change, and you will see how the theory works in practice in a real online PR. Figure 2 shows the seven questions in the PR and the timing for each question. Additionally you find a suggestion for the technology to mediate the on-line PR.

Table 1. Tools for online Proactive Review

Question	Minutes	Technology
1. Icebreaker & What is the purpose of the PR?	15	Web conference and Phone conference
2. What was our goal?	5	Chat
3. What happened and why?	45	Alchemy or chat
4. What should we do next time?	55	Web conf, Phone conf
5. What to report?	45	Slide in the web conf
6. What management challenges might be addressed?	10	Do
7. What was your personal highlight?	5	Web conf, Phone conf, chat

The *web conference* showed the slides on all participants' screens. Alongside the web conference, a *phone conference* (Intercall) was activated in order for all participants to talk and listen. The phone conference allowed the participants to talk in smaller groups (so-called break-out sessions) and to come back into the plenum when required.

The *chat* was placed in the lower right corner of the web conference, and the participants and the facilitator could write their comments there while all the other participants and the facilitator could read the inputs.

Alchemy was an internal discussion forum where the participants could start up and follow the threads they needed.

The ideas from 'What should we do next time?' were concretised in 'What to report?'

The report was named the 'Action and Communication Plan' and had a specific format which was presented and filled out as a slide in the web conference during the online Proactive Review. After the online PR, the sponsor was responsible for the implementation of this plan, and the management challenge was addressed to top management. The online PR finished off with individual reflections on the personal benefits from participating.

Methodology: design-based research

The development of the educational design of Proactive Review was initially not a research project, and it was not planned as scientific research. However, its success was founded on the feedback from participants, decision-makers and end users of the results. Research methodologies were utilised for receiving the crucial feedback from users spread over EMEA.

This study investigates organisational learning from a learning perspective. Consequently, the methodology should mirror this approach. Design-based research (DBR) was developed for researching classical classroom training. In this study, DBR will be utilised for researching collaborative learning and innovation in the context of work. DBR allows active involvement of the participants and includes a number of iterations for improving the design of the Proactive Review. The development took advantage of the participants' expertise (Barab & Squire 2009) and high involvement (Collins et al. 2004), and the researcher collaborated with the researched people, investigating known and unknown aspects of practice. The researcher influenced practice due to the research itself. The researcher is aware of this 'un-neutral' role (Pedersen et al. 2012).

Dede (2004) is critical of DBR and highlights the fact that DBR sometimes lacks a strong theoretical foundation and lacks of standards for concluding when to cancel a design approach as unpromising. Dede suggests that the design of the research is differentiated from its conditions for success and that these conditions should not be changed from one iteration of the DBR to the next. Inspired by Dede's thoughts, this study points out the areas to be looked into, based on the theoretical foundation, and the following areas will serve as conditions for success (Dede 2004).

- The individuals and the organisations interact (Elkjaer 2003).
- The online PR embraces work practice (Elkjaer 2003).
- More kinds of employees are invited to online PRs (Pålshaugen 2000; Elkjaer 2003).
- The employee will use his or her *experience,* which includes thinking, knowledge, sensations, emotions and intuition (Elkjaer 2003).
- The online PR leads to changes in cognition and behaviour (Vera & Crossan 2000).

The study explores online collaborative learning as it thrives in online Proactive Reviews. The development of PR is based on a number of iterations, and the development of online PR is to be seen as a new iteration. The new educational design includes information and communication technology (ICT), and the study captures problems identified by practitioners and participants (Engeström 2011) who may uncover how to improve the dialogue in online PRs.

According to Collins et al. (2004), it is critical to analyse various aspects of an educational design in order to improve it. To understand how to improve learning and innovation in the context of work when working online, it is interesting to look into how the understanding of the participants in the PR changes, how the group dynamics unfold during the online PRs and how the technology influences the interaction within the group of participants.

Various aspects of an analysis could be interesting, according to Collins et al. (2004). This study will focus on only the following three aspects:

- The C*ognitive level* explores how the understanding of the participants changes as a function of their participation in the online PR. This aspect is important for exploring the participants' ability to learn (Nonaka & Takeuchi (1995); Elkjaer (2003); Vera & Crossan (2000)).
- The *Group dynamics* uncovers the interactions within the group and group dynamics like authority or domination. Group dynamics is a mix of the so-called 'Interpersonal level' and the 'Group level' which Collins et al. describe as intertwined (Collins et al. 2004). This aspect is important for exploring the complex interactions of collaborative learning (Stahl et al. 2006).
- The *Resource level* deals with material available for the participants and how easy it is for the participants to find and use it (Collins et al. 2004). This aspect is important for exploring the impact of the technology on the interactions in the PRs.

Empirical setting

The researched company is a world-class IT company delivering hardware, middleware and software to market leaders of banking, transportation, healthcare etc., only working business to business (Rao 2003). In 2011, the company had about 108,000 employees and revenue of 36.7 billion US dollars over 12 months. The same year, the IT company in EMEA had approximately 30,000 employees in more than 40 countries. From 2005 to 2011, the strategy changed from being a multinational company with local organisational entities in the countries to being a global company with global lines of business, where the employees worked in teams with members from more countries, managed online. During the same period, more than 60 companies were merged into the IT company, including a vast number of new employees. It became increasingly important to collaborate online, to learn from experience and to collaboratively learn online.

The author had the role of Manager of Organisational Learning (EMEA) from 2005 to 2012, with the responsibility of developing and implementing an educational design for learning from experience and innovation; the result was PR. Her role enabled her to engage in PR from the very beginning through a number of development iterations over eight years, including the development of an educational design for running PRs online.

Empirical Data

This study includes more data types and data sources to establish more credibility (Tracy 2010). The qualitative data may show three perspectives (Schraube 2010). The first person perspective explores the inner life of the researched person, the second person perspective unfolds the inner life of the researched person based on interaction with the researcher and the third person perspective keeps a distance from the

researched people as the researcher 'neutrally' observes the researched field. Here, the empirical data sources include two online PRs and experience from two facilitators.

According to Engeström (2011), the unit of analysis in DBR is sometimes vague. Consequently, this study includes an argumentation for the choice of PRs.

The study includes two online PRs:

A1: A lost sales bid in East Europe (EE), which was the first online PR in 2009. The PR was conducted as a consequence of the loss. This online PR is interesting because it was initiated *after* something had happened, and it was initiated on an event perceived to be negative by the participants, the sponsor and the top management. Additionally, it was the first online PR; consequently, the ICT mediation was new to everybody including the facilitator.

A2: Establishing an EMEA strategy for 100% growth for a new product in 2011. This online PR is interesting because it was initiated *before* something should happen, and it was initiated to innovate solutions for a task perceived as difficult by the sponsor and the participants. Additionally, the sponsor attended the online PR. In 2011 the ICT mediation was well known to both the participants and the facilitator.

The experience from the two facilitators originates from two interviews: B for Bangalore and E for Spain.

B. A facilitator from Bangalore, India, spoke about his experience from the latest three online Proactive Reviews that included two lines of business, the support centre and consulting. This data source is important, because the Indian facilitator was amongst the first to be trained, and he had several years of experience. Furthermore, the collaboration between the office in Bangalore and the EMEA offices developed a need for online PRs at a very early stage.

E. A facilitator from Spain shared her experience with online PRs. This data source is interesting, because she, as a very experienced facilitator, had experimented with different kinds of ICT, ending up in valuable proposals for the technology to be used in online PRs, and she presented rich reflections on group dynamics.

Data and Analysis

The data from A1, a lost bid in EE, includes observations and an online chat between the seven participants situated in four countries and a country manager who was the sponsor of the online PR.

The data from A2, establishing an EMEA strategy, includes observations, an interview with the sponsor, who was a senior vice president, and an online chat between twelve participants, who were high level managers placed in nine countries.

B. The experience of a facilitator in Bangalore is gathered in an interview.
E. The experience of a facilitator in Spain is gathered in an interview.

The first person perspective is gathered through direct feedback from end users and stems from online chats, discussions in the internal discussion forum called Alchemy and the action and communication plan from the two PRs. The second person perspective is explored in interviews with sponsors of the online PRs and with experienced online PR facilitators. The third person perspectives come in as observations of online PRs that are facilitated or co-facilitated by the researcher, who captured the observations in handwritten notes throughout the PR. Some of the notes were transformed into blog stories and were published internally in the IT company. Additionally, slides from the two online PRs deliver data to this study. Below is an overview of the data types and areas of analysis.

Table 2. Areas of analysis (DBR) and data types

Data Type **Analysis (DBR)**	**Analysis to find enablers and obstacles**	**1st person perspective**	**2nd person perspective**	**3rd person perspective**
Cognitive level	Individual learning	Chat Action and communication plan	Interview with sponsor who participated	Slides from PR
Group dynamics	Interaction between the facilitator and the participants, and between the participants Concord or Conflict	Chat Alchemy	Interview with B Interview with facilitator E	Observations
Resource level	Technology	Chat	Interview with B Interview with facilitator E	Observations

The purpose of the Proactive Review is to create innovation and learning based on

work experience. According to the learning spiral, the results of the PR should provide learning in four areas: individual learning, team learning, management learning and learning across the organisation.

The analysis below is structured according to the three aspects described above: the cognitive level, the group dynamics and the resource level.

The cognitive level
Does the individual learn in online PRs?

The participants were invited to the online PR to learn and innovate. They had shared a task, and the online PR enabled them to identify enablers and obstacles for achieving this task. The dialogue in the online PR allowed them to share experience, thinking and reflections, which provided each of them, and the team as a whole, with new experience and new insights (Elkjaer 2003).

> A1 Actions: Assign a lead for the project, assign a bid team, assign high-level sponsor, improve presales, a few persons to meet the customer, create plan for competitors (Action and Communication plan A1).
>
> A2 Actions: Define ownership and responsibility, team up with HW, create application for XX, innovation with ABC, make XX standard platform, upgrade migration path, define partner strategy for XX, deal with internal competition (Action and Communication plan A2).
>
> 'I saw some conflicting interests which need to be handled—most likely by myself'. (A1 Chat, the sponsor)
> 'We have made a standard process for working with third party'. (A2, interview with sponsor)

The action and communication plans showed a number of changes to be initiated as a result of the online PR. A1 documented new insights of the participants: they decided new initiatives in order to solve common tasks more efficiently, for example, the assignment of a lead for the project or the creation of a plan to counter competitors. A2 documented awareness of the new tasks, for example, the issue about ownership and responsibility within the team, and they innovated by coming up with new suggestions for an application and for making XX a new standard platform.

The interviews included new insights, for example, conflicting interest in A1 and an innovation being a standard process for working with a third party in A2.

The data indicate that the participants gained new insights on an individual and on a team basis. It seems as though the online PRs enabled the participants to learn from experience.

The group dynamics
How is the interaction between the participants and the interaction between the facilitator and the participants?

The participants in an online Proactive Review should be encouraged to speak their minds, as everybody has a say, and everybody is expected to contribute on an equal basis (Bohm 1996).

> All participants were invited to the chat, but the sponsor did not contribute. (Observation, A1 chat)

> All participants showed up in the web conference on time. 100% participation in the poll, 'How did the sales process go?' Lively discussions in the break-out sessions, (Observations, A2)

The data indicates that the facilitator encouraged everybody to speak their minds by contributing to the chat, the poll and the break-out sessions in both online PRs. The data shows that the facilitator enabled a high level of participant activity in A2, whereas the facilitator did not succeed to the same extent in A1. Here, the sponsor did not participate in the chat. The data do not say why he decided to stay silent, but by staying silent, he did not attend on an equal basis. Either he was modest and would not interfere, or he kept the formal hierarchical distance by observing instead of contributing.

Does the team run into concord or conflict?

The participants identified the causes and created solutions to the problems they identified through the question, 'What happened and why?' In order to do so, the participants needed to explore unknown areas, where they needed to be brave enough not to know (Wegerif 2007). The dialogue caused by the question, 'What should we do next time?' made the participants exchange points of view that may have caused changes in opinions. According to Von Krogh (2005), the participants rarely perceive this type of conversation as 'a safe area', and the facilitator is responsible for creating a caring atmosphere in order for the participants to build trust, support concord and avoid conflicts.

> 'Lack of leadership throughout the project.'
> 'Lack of top management engagement.'
> 'Too many faces in front of the customer.'
> 'The demo did not meet the customer's expectations.'

> '**Conclusion**: We need to manage the customer's expectation and agree on them. Assign an owner of the demo. We need to create a demo program, and the presentation needs to be a shared task between relevant LOBs [Line of Business]/ right people in the project.' (Participants in Alchemy A1)
>
> A and S offended Y by saying that the presentation to the customer was poor. After this utterance, Y withdrew himself from the conversation. (Observation, A1)
>
> Y: 'Hard to see the point of a PR.' (Chat A1)

The data indicate that the participants identified specific issues that made them strongly involved. They showed negative emotions by using the words 'lack of leadership', 'lack of top management engagement', 'too many faces' and 'the demo did not meet the customers' expectation', which offended Y, according to the observation. They started formulating a number of issues, and the action and communication plan from A1 showed that they finished by providing solutions (see 5.2.1). The dialogue within the online PR enabled the participants to exchange points of view and achieve a common opinion on what to do (the action and communication plan).

The facilitator may not have maintained a caring atmosphere for all participants, as Y withdrew himself from the conversation and stated that it was 'hard to see the point in the PR' at the end of the PR. A and S confronted Y by using the words 'poor demo', and the conclusion included solutions for improving demos. Maybe A and S dominated the meeting, and Y did not go into a discussion with A and S. The dominance of A and S may have prevented Y from being brave enough not to know. In any case, Y stayed silent during the rest of the PR. Consequently, the participants did not know the background for creating the demo, and the solution did not include comments or commitment from Y.

The conflict between Y on the one side and A and S on the other side seems not to have been solved. This leads to the consideration of a facilitator's point of view.

> If a conflict is to occur in a face-to-face PR, I can prevent it, or I can easily calm down the participants. This is not an option in an online PR. My only 'tool' is to mute all lines and keep talking to calm down the participants. But you really don't know the emotions online. (Interviewee E)

The utterance from E indicates that negative emotions are not easily changed in an online PR.

> Virtual PRs are a poor substitute for face-to-face PRs, where the project team is able to sit in a room together and discuss the PR questions. In a virtual environment, neither the facilitator nor the participants are able to pick up cues from body language and expressions of the participants. It is much more difficult to encourage participation, since being silent means being invisible—a facilitator is not able to understand if a participant is silent because he/she is listening or because he/she does not agree with the discussions and is on a silent strike. (Interviewee B)

> Face-to-face PRs are easier than remote PRs, because I am quite good in reading body language. (Interview with E)

The facilitator from Bangalore (B) raised awareness on the difficulties of creating a safe atmosphere and building trust in online PRs. As neither the facilitator nor the fellow participants can pick up cues from body language, the communication becomes limited, with the consequence that silence is perceived as absence. And this absence causes worries about the causes of the absence. Compared to face-to-face PRs, they miss the ability to ensure commitment or to discover disagreement from the body language. Both the Spanish and the Indian facilitator found it more difficult to conduct online PRs compared to face-to-face PRs, as they sometimes didn't know what was going on in the group.

A1 was an online PR on a lost bid, while A2 was an online PR on developing a strategy. A1 began with disappointed participants, whereas A2 began with expectant participants. The emotional starting point may have affected the atmosphere.

In both cases, the facilitator tried to create a caring atmosphere. The facilitator was successful in A2 and less successful in A1.

Starting on a positive note seems to enable the participants to contribute on an equal basis, leaving out the formal hierarchy. A caring atmosphere seems easier to maintain when the online PR begins with a case with a positive result or positive expectations.

Resource level
How easy is it for the participants to use the technology?

The ICT-mediated PR had the purpose of finding out how the technology supports learning or prevents learning from occurring. Here, the focus is less on the technology itself and more on how the technology facilitates the interactions and learning among the participants (Wegerif 2007).

- A, Too long, I cannot keep concentrated.

- S, My ears hurt, we should have had an official break.
- Mi, Interesting process, but too long. (Chat, A1)

> Delay caused by technical obstacles. Noise on the lines caused by an awful echo. The noise on the line was caused by participants who tapped on their computer. (Observation A1)

The utterance, 'My ears hurt', indicates that the online PR is physically demanding. The impression that the online PR is too long and that it is hard to maintain concentration indicate that it is also too demanding mentally. This impression is supported by the fact that the online PR was disturbed by the technology. First, the start was delayed; second, the echo made it difficult to hear what was said. Above, we saw that the facilitators found the online PR more demanding than face-to-face PR, because of the lack of body language. The data indicates that the technology may be seen as an obstacle to learning in online PRs. When the technology mediates the online PR in this way, as for A1 and A2, we may perceive the technology as an obstacle to the collaborative learning.

> In online PRs, my only 'tool' is to mute all lines and keep talking to calm down the Delegates. (Interview with E)

If a participant tried to dominate the phone conference, the facilitator could mute all phone lines so that only one participant was to be heard.

But the technology, consisting of the phone conference, the web conference, chat and Alchemy, seems to encourage the participants to speak their minds in the online PR. The chat and Alchemy showed that everybody got the opportunity to have a say.

The Results from the Online PRs

The learning spiral implies learning in various areas in the organisation: individual learning, team learning, management learning and learning across the organisation. The interviews with the sponsors for A1 and A2 showed that they learned on an individual basis. One of them realised that there was conflicting interests within the team (A1), while the other mentioned 'a new standard for working with third parties' (A2).

A1 included the development of new work processes (assign lead, bid team and high level sponsor), whereas A2 delivered the development of a new product (an application), new services (partner strategy) and new work processes (upgrade migration path). The latter signals that the participants had changed cognition and in the future, may change behaviour. According to Vera and Crossan (2000), the online PR made them learn. The participants identified important problems and created solutions. They utilised their experience, thinking and reflection to solve the problems, which gave them new experience and new insights—new knowledge (Elkjaer 2003).

The agreed-upon action and communication plans for A1 and A2 indicate that the teams learned from the online PR as they achieved a common understanding of important issues and agreed upon how to solve them.

Receiving the action and communication plans, the sponsors learned about the enablers for and the obstacles to achieving success. Both online PRs delivered management challenges to the top management in the IT company.

> Set up a leadership matrix (Management Challenge A1)
> Develop and implement new escalation process (Management Challenge A2)

From the two online PRs, the top management learned about important issues they needed to handle. The action and communication plan and the addressed management challenges may change the managers' cognition and their behaviour when the management challenges are solved and implemented. The management seems to have learned (Vera & Crossan 2000).

The action and communication plans are communicated to peers both on the employee level and on the management level and make more employees learn from the online PR.

A leadership matrix includes organisational changes, and a new escalation process includes changes in workflow and possibly organisational changes as well. When the management challenges are solved and when they are being implemented, it will affect the employees across the organisation, as they must learn the new leadership matrix or the new escalation process.

The results of the online PR are learning in more organisational areas: the individual participants, the group of participants, sponsors and top management and employees across the organisation.

Findings

The results of the online PRs were the development of new products, new services and new work processes. By sharing experience, the participants learned individually and innovated as a team, whereas managers learned from the action and communication plans as well as from the addressed management challenges, and the learning from the online PR spread across the organisation.

The sponsor participated in both online PRs, which may have influenced the equality. In order to achieve equality, all the participants have a say, everybody contributes to the dialogue and dominance should be lacking. In A1, we saw that the sponsor stayed silent, not contributing to the dialogue. This may be seen as a sign of maintaining

formal power during the online PR, and his silence may undermine the equality amongst the participants and emphasise the formal hierarchy.

An experienced facilitator explained that the lack of body language in the online PR made it harder to manage. Negative emotions are hard to change in an online PR, maybe because it is easy for a participant to drop out—he only needs to place the phone on the table and work on other matters—and maybe because the facilitator has limited interventions at hand online.

Conflicts between the participants may cause dominance and defence. Dominance may exclude fellow participants from the dialogue or prevent participants from being brave enough not to know or to explore unknown areas. The consequence may be that the solutions may lack important experience, insights and innovation.

The technology may be an obstacle in itself, because of the noise, delays and lack of body language and maybe because of a lack of skills in utilising the technology. Additionally, it is physically as well as mentally demanding to participate in a computer-mediated dialogue of over three or four hours.

The study provided new theoretical inventions by presenting a theoretically founded and tested educational design for collaborative learning in the context of work. The seven questions in the online PR as well as the organisational learning spiral are new inventions developed over several iterations (Kolbaek 2014).

The study provided new methodological inventions, as it utilises CSCL and DBR in the context of work, which is outside the traditional domain of the educational environment.

Follow-up on the conditions for success

The individuals and the organisations interact (Elkjaer 2003) when the participants are invited for the online PR, when they involve peers in the implementation of the action and communication plan and when they address the management challenges to the top management, who react by developing and implementing changes in the organisation.

The online PR takes its departure from a task that has been or is to be solved by a team. Work practice (Elkjaer 2003) is the foundation of a PR.

In this study, more kinds of employees were invited to online PRs (Pålshaugen 2000; Elkjaer 2003). A1 included seven employees from four countries as well as a manager. A2 included twelve high level managers and a senior vice president.

The action and communication plans from A1 and A2 indicate that the participants used their experience, including thinking and knowledge. A1 involved negative

emotions. The data do not inform about the sensations or intuitions of the participants (Elkjaer 2003).

The online PR led to changes in cognition and behaviour (Vera & Crossan 2000) when new services and work processes were developed and implemented.

Conclusion

Though the technology made the online Proactive Review quite demanding for the participants, the results of the PR showed that the technology enabled the participants to engage in dialogues that let them innovate and create solutions to complex problems. Despite the obstacles, the online Proactive Review improved learning and innovation in the context of work and enabled the participants to collaborate online. The feedback from the facilitators and the participants and the observations suggested that it is difficult to create a caring atmosphere and to build trust in online PRs, especially if the PR is started due to a task with a negative outcome.

Online Proactive Reviews lead to circuits of knowledge; by attending the online PR, the participants collaboratively create new knowledge. This team knowledge is shared through the action and communication plan, and the circuit of knowledge expands to the colleagues who are close to the participants. When the management challenge is addressed, the circuit of knowledge includes the top management, who continues the circuit of knowledge back to the employees when implementing the changes caused by the management challenge.

Future research

The ITC utilised in the online Proactive Reviews showed some negative consequences due to the lack of body language. Future research may include video conferences as a means of solving this issue.

As the context has an impact on learning, future research may compare the processes and results from online and face-to-face Proactive Reviews to explore whether one of the types is more superficial than the other.

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4.6.2 DID I LIVE UP TO THE REQUIREMENTS FOR 'GOOD' DBR?

Engeström criticizes DBR for allowing the researcher to define the intervention and to implement without questioning the intervention itself (Engeström, 2011, p. 601). This study shows that the researcher did NOT define the intervention entirely on her own; other stakeholders initiated interventions as well. Table 4 shows that interventions in PR were initiated by managers at various hierarchical levels, facilitators, external auditors and others.

The five iterations included in this PhD study show collaboration between the researcher and the stakeholders, being the participants, managers at various levels, the PR community of facilitators and experts who were willing to give rich feedback and to contribute their expertise to the development of the educational design of PR (Barab & Squire, 2004). Without this precious collaboration, the educational design would hardly have survived in the global IT company.

The data collection in the iterations demonstrates that the interventions were only drafts that needed special attention, and changes were expected. The stakeholders provided suggestions for changes, so I perceive the stakeholders as much more than recipients; rather they are co-players in the concert of learning. I think I have lived up to Collins' (2010) suggestion of minimizing the distinctions between the researcher and the people to be studied.

> Engeström claims that '*In contrast to variable-based research, process-oriented research believes that causation can actually be observed and reconstructed as a real sequence of events*' (Engeström, 2011, p. 610).

Looking back, it seems like I have focused on processes when observing various PRs, extracting causations, such as '*Consulting is frustrated because Sales do not answer their questions. Sales is smiling, saying they did everything well*.' The result was '*Quarrel: Blaming, defending, shouting, smiling and nodding, big arm movements, looking to the ceiling*' observation notes from the third iteration about dialogue.

Very often, DBR studies do not produce measurements based on quantitative methods; instead, DBR contains rich descriptions of the context (Anderson & Shattuck, 2012). In this study, the top management asked me to measure the results of the PRs. I was reluctant to promise any measurements, but 'results' were needed in order to continue the program. I became inspired by the literature to identify the changes caused by the PRs, explaining

that changes and learning were equivalent, which may be questioned because learning may occur with or without tangible results. Changes and learning may be equivalent in the tangible outcome of the PR, like the action and communication plan and the management challenges. However, learning may also improve team spirit or deepen the understanding of others' points of view. These are some of the intangible results of PRs that may or may not lead to changes, for example, in behaviour. Thus, the learning caused by the PRs grew in more directions and was richer than the changes could show.

Inspired by the criticism of DBR provided by Dede (2004) and Engeström (2011), I developed requirements for 'good' DBR in section 3.5.1. These requirements should not be changed throughout the iterations. Below, I will discuss the requirements for 'good' DBR. The requirements for 'good' DBR are as follows.

- The individuals and the organizations interact (Elkjaer, 2003).
- PRs embrace work practice (Elkjaer, 2003).
- More kinds of employees are invited to the PR (Pålshaugen, 2001; Elkjaer, 2003).
- The employee will use his or her experience, which includes thinking, knowledge, sensations, emotions and intuition (Dewey & Boydston, 1976; Elkjaer, 2003).
- PRs leads to changes in work practices, product or services (Nonaka &Takeuchi, 1995; Engeström & Kerosuo, 2007).
- Define when to finish the development of the educational design (Dede, 2004).

The individuals and the organization interact

In the pilot project, Dan interacted with the organization by presenting his experience to colleagues in his CoP as well as to local colleagues. The result of the pilot project, namely the first educational design of PRs, was implemented in the organization. The action and communication plan as well as the implementation in itself made individuals and the organization interact.

The training of facilitators presupposed the involvement of top management to fund the training and of managers at all levels to approve participation in the training. Most importantly, employees needed to volunteer for the training program, and they influenced their local working environment by suggesting PRs on their return. Individuals—being employees at many hierarchical levels—and the organization interacted.

Tense PRs led to an understanding of dialogue as the foundation for learning and to the development of the first codes of conduct and organizational requirements. Participants' 'bad behaviour' had an impact on the educational design; thus, the individuals and the organization interacted.

The educational design for online PR was developed by a small expert team. More iterations were needed to achieve a useful design, and the implementation involved both management levels, technical parts of the global IT company and the PR community. Individuals and the IT organization interacted during the development and implementation of online PRs.

Proactive Review embrace work practice

The iterations show that PRs were run in different lines of business and that the educational design seems suitable for learning from positive as well as from negative experiences. As mentioned above, the tangible outcome from PRs is the action and communication plan and the management challenges; both outcomes reflect needs from work practice. To be a successful facilitator, one should know about the work practices behind the PR. Therefore, the iterations of the development of PR embrace work practice.

More kinds of employees are invited to the Proactive Review

The first iteration included participants from two divisions, namely Sales and Consulting staff from two countries. The second iteration presented a case story from a third country with participants from different divisions: two from sales, two from consulting, three from presales and one from contracts. The third iteration utilizes observations from three PRs representing three countries/regions and 19 employees from various levels in different divisions. The fourth iteration described a case study with two employees from different levels in the global IT company and four customer representatives. The fifth iteration included two online PRs; the first had eight participants and the second had 19 participants from nine countries. This DBR-based study includes more kinds of employees in the PRs.

The employee will use his or her experience, which includes thinking, knowledge, sensations, emotions and intuition.

A participant is invited for a PR to share his/her experience. Let me give a few citations to illustrate the thinking, knowledge, sensations, emotions and intuition below that indicate that this

study fulfils the requirement of utilizing the experiences of the people I have studied.

> *'Throughout the project lifetime our focus was set on the delivery date. This meant that the project team did not discuss an alternative deadline.' (Dan, From AAR to PR)*

> *'Lack of leadership throughout the project.' (Online PR, A1)*
> *'Too many faces in front of the customer.' (Online PR, A1)*
> *'The demo did not meet the customer's expectations.' (Online PR, A1)*

The above may be seen as illustrating thinking and knowledge.

> *'I felt free to tell what I found relevant for the current and future projects, and all of the other members felt the same'. (Sales Manager, EE, Dialogue)*
> *'Too long, I cannot keep concentrated.' (Online PR, A1)*
> *'My ears hurt, we should have had an official break.' (Online PR, A1)*

The above may be seen as expressions of emotion.

> *'The Proactive Review made it possible for me to formulate my dreams. I am not used to that'. (Dialogue)*
> *'Hard to see the point of a PR.' (Online PR, A1)*

The above may be seen as expressing sensations.

> *'The AAR can be useful not only for understanding problems, but will help us repeat successes in the future.' (Paul, From AAR to PR)*

> *'Lack of top management engagement.' (Online PR, A1)*

The above may be seen as formulations of intuition as the statements signal a gut feeling rather than evidence.

Proactive Review leads to changes in work practices, product or services
The tangible outcome from the PR is supposed to ensure changes in work practices, products or services. The article Prerequisites for dialogue… shows a table with the annual number of registered PRs and the number of delivered management challenges.

Furthermore, interviewed managers provide insights about changes. For example, Fred (in the first iteration) made organizational changes in order to give employees more real-time feedback, and he implemented new work practices. Within a few days, a guru was appointed. Due to the PR described in the second iteration, new work practices were invented. The data does not show any changes in products, but inviting a customer for a PR may be considered a new service (fourth iteration).

Define when to finish the development of the educational design
A DBR project may be finished when the process or the results are 'bad enough' or 'good enough'. The descriptions of DBR by Collins et al. (2004), Collins (2010) and Anderson and Shattuck (2012) do not provide recommendations in this regard. In this project, the design was finished when the version was ready for implementation, but I did not define conditions for when to finish the design, and new iterations were started when new requirements were raised.

In 2012, the top management decided to stop further development of PRs as they were satisfied with the design, the penetration and the results. Today (at the very end of 2014), PR is still run in the global IT company. From a methodological point of view, it may be interesting that it was not the researcher but the most influential stakeholder who stopped the development of the educational design for learning from experience in the context of work. The development of the educational design was finished, even though I could see the potential in developing PRs to include learning between organizations. I must leave this for further research.

The requirements for 'good' DBR are followed throughout this PhD study, and the requirements have not been changed between iterations.

4.6.3 THEORETICAL CONSIDERATIONS FOR ONLINE PROACTIVE REVIEW

All the articles and this PhD thesis include the learning spiral, and in this paper the description is more elaborate and inspired by the SECI model (Nonaka & Takeuchi, 1995). The conditions for success include that online PR leads to changes in cognition and behaviour (Vera & Crossan, 2003). As mentioned before, I have no data to investigate 'cognition', so it should not be a condition for success, whereas changes in behaviour can be explicit, for example, the

changes in project management and countering competitors. Therefore behaviour could be used as a condition for success.

I think the paper suffers from a lack of thorough theoretical considerations regarding establishing a caring atmosphere and trust online. I dwelled on 'trust' in my presentation at the conference, and if I expand the paper to become an article, I will certainly add more theory.

Since I wrote this article, I have changed the conditions for success, so that 'changes in cognition and behaviour' is replaced by 'changes in work practices, products and services' (Nonaka & Takeuchi, 1995; Elkjaer, 2003).

4.6.4 MODIFY THE EDUCATIONAL DESIGN OF ONLINE PROACTIVE REVIEW

Moving PRs from a face-to-face setting to an online setting included a lot of changes—not in the seven open questions but in the facilitation of the PR. A traditional PR lasts three hours, which is far too long to be on the phone; so the time for talking had to be cut down and replaced with written interaction. Here are a number of challenges: what technology would be suitable for confidential online dialogue? What questions should be discussed orally, and what questions should be discussed in a written format? How should confidentiality be maintained? How can a caring atmosphere where participants dare not-to-know or to disagree be created? How can trust be established in cyberspace? How should the time be divided between written and oral conversation?

In order to create a feeling of belonging to a group and to create initial trust, the online PR started with a phone call during which everybody introduced themselves. There was a brief icebreaker (a poll showing how satisfied the participants were with the result they had achieved) and the sponsor discussed the purpose of the PR. The facilitator repeated the codes of conduct, emphasizing the special codes of conduct for online PR (which is outside the scope of this paper). Then the participants placed the phone on the table. They did not hang up to ensure they were not disturbed.

The participants gave their perceptions of the original goal of their activities in a chat, so that it became clear to everybody to what extent they had agreed on the goal. The facilitator concluded whether they agreed or not.

Looking back on what happened and why is less creative than looking forward to create the preferred present and a favoured future. Besides, the past included less uncertainty and required

less courage for not-knowing. Therefore, we decided that the question of 'what happened and why' would be the subject for the written conversation, where the participants should describe their individual obstacles and enablers in achieving the common goal. Everybody presented their obstacles and enablers, which were commented by the other participants. We chose the tool 'Alchemy' because only invited people could gain access. Thus, they could vote on the most important obstacles and enablers, which would then be discussed in terms of 'what we should do next time' The written contributions were automatically deleted from the server after eight weeks.

'What should we do next time?' and 'What to report?' were discussed in a phone call supported by slides and chats on the web conference. This oral dialogue enabled the participants to share uncertainty and not-to-know without the risk of having this recorded. Still, confidentiality was a challenge.

In a traditional PR what is said 'stays in the room when we leave', which means that the dialogue is confidential. All information from the PR is decided by the participants and consists of the action and communication plan, the management challenge and sometimes a story for an internal newsletter or a presentation in a CoP. But the dialogue is never to be cited. In online PRs, parts of the dialogue must be written and will not disappear when the participants leave. They will remain, and somebody may be able to look at them. The consequence is that the participants may be reluctant to dare admitting mistakes or not-knowing.

The very experienced facilitators claimed it is hard to create and maintain a caring atmosphere in online PR because of the lack of bodily cues. We did not find a technology that solved this problem, but later video meetings became an option, and that contributed to the caring atmosphere and the establishment of trust. An example of the consequence of the lack of body language was that the sponsor kept silent in one of the online PR chats. The participants did not know why he was silent, and they could not see his reactions to what they expressed. His role was unclear; perhaps he just did not care, perhaps he just wanted to watch them or perhaps he just wanted them to work without interference. The silence may have caused uncertainty or even worry for the participants.

The facilitator prepares the PR with the sponsor and discuss whether the sponsor should participate or not. In a traditional PR, the participants can see if their superior is present. This may not be an option online because the sponsor could sit next to a participant and follow the PR. This is not likely to happen in the

global IT company because it will be against the ethical guidelines, but concerned employees may be worried about this situation anyway.

The technology turned out to be an obstacle in itself. Therefore, I recommended two facilitators for online PRs, one to take care of the flow and atmosphere and a technical facilitator to maintain the technology, for example, to mute the phone in case of too much background noise.

4.6.5 CONSIDERATIONS FOR METHODS AND DATA COLLECTION IN THE FIFTH ITERATION

The data in this iteration stems from online PR and from a PR used to create a strategy for a new product. The methods cover three interviews and my observations from two online PRs, and the data consists of an online chat between the participants in both PRs. In addition, two experienced online facilitators were interviewed, one from Spain and one from India.

Table 8. Data collection, fifth iteration, online PR

Perspective	Data source	Number
First person	Online chat	2
	Future workshop	1
Second person	Interview	5
Third person	Observations	2

My role

I facilitated the two online PRs, and the observations are based on my handwritten notes as well as on stories I put on the PR blog. From the very beginning I was doubtful about the online PR because I predicted the challenges and I was afraid of spoiling the good reputation PRs had gained in the global IT company. My doubts made me biased, so I may have been alert, and the observations may have been more critical than necessary. Therefore, I interviewed two very experienced online facilitators to make them disagree with me and to add more positive perspectives relating to my concerns. This did not happen, as they mentioned the same concerns.

Ethical considerations

I chose very experienced facilitators to reflect on online PRs in order to receive honest feedback, and I suppose I got that. In an email, I asked if the facilitators would be so kind as to be interviewed. Later, I sent the questions and asked them to answer

within two weeks in order to give them time to thoroughly reflect. I tried to minimize my influence on the interviewees by only approaching them once and only in writing. Based on their answers, I wrote a story for the PR blog, and they approved the story before it was published. Confidentiality was maintained by changing the names of my colleagues, but the countries/regions and divisions have not been changed.

4.6.6 ANALYSING THE EDUCATIONAL DESIGN OF ONLINE PROACTIVE REVIEW

The *interpersonal level* addresses the interaction between the facilitator and the participants as well as the interaction between the participants. It seemed harder to develop relationships and respect between the participants in an online PR, especially if the starting point was negative. The *group level* showed that the silence of the sponsor could be perceived as a kind of domination, and the facilitators explained the difficulty of reducing anger and other forms of oppression online. The group dynamics showed a conflict in one of the online PRs, and this conflict was not solved.

4.6.7 UTILIZING THE VARIABLES

The *cognitive level* showed how the understanding of the participants changed as a function of the PR. In both online PRs they delivered an action and communication plan as well as a management challenge, which shows they learned something new.

The *group dynamics* were different in an online PR as the format resulted in different challenges than a face-to-face setting. For example, it seemed to be a problem that the one sponsor kept silent.

The *resource level* included the technology utilized for the online PRs. In the first online PR, the technology was new to the participants and to the facilitator, whereas it was familiar to everybody in the second online PR. The professional development of the participants enabled them to handle the technology even though the technology turned out to be an obstacle in itself, at least sometimes.

4.6.8 HOW THE STAKEHOLDERS AND RESEARCHER WORKED TOGETHER IN THE FIFTH ITERATION

The educational design of on-line PR was developed by a task force of very experienced facilitators with a passion for ICT. The design

was assessed and changed through a number of iterations over 5–6 months. The collaboration between the stakeholders and me (as the researcher) was fruitful and certain aspects ended up in a new educational design for online PRs as well as in an additional training course for the facilitators.

The willingness to share experiences in an interview may show that the two facilitators wanted to contribute to my learning in my role as the researcher and to contribute to the learning of the PR community by sharing the stories in the PR blog.

4.6.9 REPORTING ON ONLINE PROACTIVE REVIEW

The three interviews were reported as stories in internal newsletters or on the PR blog. The additional training for online facilitation was 'advertised' as a PR blog story, presented during a PR web conference and placed on the PR webpage. The external reporting consists of a conference paper presented at the OLKC conference in Oslo, April 2014.

4.6.10 CONCLUSIONS ON ONLINE PROACTIVE REVIEW, THE FIFTH ITERATION

In this chapter, I have described some implications of changing the context of PR from a face-to-face meeting to an online meeting. The analysis provided insights about some of the difficulties caused by this.

The chapter includes the following inventions:

1) PR may be run online, which is different from a traditional PR where the participants and the facilitator meet face to face
2) Again, it was stated that PRs may start with a positive or a negative experience.

3) An online PR starting with a positive experience seemed to help in initiating and maintaining a caring atmosphere, whereas an online PR starting with a negative experience seemed to have a negative influence on Ba, which led to less collaboration as participants dropped out. Thus, online PRs based on positive experiences help develop greater consensus compared to online PRs based on negative experiences. Online PRs based on positive experiences seem to be preferable as they provide better processes and results.

4) Online PRs based on negative experiences seem to slow down the learning process, and it seems more difficult to change the mood or emotions in an online context than it is when the participants meet face to face.

5) Online PRs may be run on experience already gained. Here, an online PR was run to establish a strategy that included future collaboration. In the latter case, *proactive* means to explore the unknown in order to innovate for a favoured future.

6) Online PRs may or may not include the sponsor like traditional PRs. The difference is that the participants are sure about the presence of the sponsor when he is or is not physically present in the room, whereas there may be a risk that he is silently present in online PRs. The uncertainty about the presence of the sponsor influences the perception of confidentiality and trust in the online PR, as long as it does not include a video conference.

7) The online PR in this study lacked bodily cues; therefore, silence may be perceived as absence. When a participant does not contribute, he/she is absent, and the other participants may interpret the absence as anger, arrogance, indifference etc., which can be hard for the participants and the facilitator to handle.

8) Online PRs have difficulty in establishing trust because of the uncertainty of who is actually participating (somebody could join silently), because the written conversation does not disappear when the participants leave the online PR, because of the lack of bodily cues, because negative emotions are hard to change and because the facilitator has fewer ways of handling dominance in the online context.

9) Online PRs are physically demanding for ears and eyes that are closely linked to technological artefacts, and online PRs are mentally demanding because of the lack of trust.
10) Background noise, interruptions and technical breakdowns showed that the technology may turn out to be an obstacle in itself for learning in an online context.

11) Even though the outcomes of online PRs seem to be more superficial than the outcomes of traditional PRs, online PRs

can still help in enhancing new products, services and work practices.

12) Traditionally, DBR is utilized for learning in classrooms where the teacher and the pupils are physically present. That was also the case in the first four iterations discussed in this PhD thesis. But this fifth iteration utilized the DBR for online PRs, and it seems that DBR may also be a suitable methodology for online learning.

4.7 REFLECTIONS ON THE DEVELOPMENT OF PROACTIVE REVIEW

In this section, I will discuss my attempt to live up to the requirements for 'good' science in general. I will follow up on the success criteria for 'good' DBR and will reflect upon the DBR flow I invented in section 3.4.

4.7.1 DID I LIVE UP TO THE REQUIREMENTS FOR 'GOOD' SCIENCE?

I have used a variety of methods, including first, second and third person perspectives that range from diaries and future workshops to interviews and observations. I have presented a data collection consisting of a vast number of qualitative as well as a limited selection of quantitative data. The methods and the data collection ensure that this study is real and not imaginary.

The development of the DBR flow supported my intentions of being clear instead of vague, and the longitudinal development of PR has resulted in a deeper understanding of the challenges in implementing an educational design for learning in the context of work from more perspectives. I have been on a voyage into unknown territories, faced mysteries and solved some of them, and the global IT company has been on a voyage that has improved learning, work practices and services. I believe this PhD study has fostered a deeper understanding of the implications of learning in the context of work.

PR starts with the perspective of the learner who learns from his/her own experience as well as from those of colleagues. Knowing is constructed in collaboration with peers, and conversation is a means of learning that is founded in the socio-cultural context of work. The question of 'what happened and why' raises awareness of realities, and the action and communication plan and the addressed management challenges ensure that the participants influence these realities. The codes of conduct make the facilitator aware of her/his neutrality and the ability to not add content to the dialogue within the PR.

I introduced the iterations by stating the problem I wanted to solve, specified in a research question. In this way, I intended to be transparent in the research approach, making it clear what phenomenon I wanted to explore. I followed up by adding new theory to the iterations, and I carefully picked the place, the people to study and what actions to look for to ensure that the

data reflected the phenomenon. The conclusions of the iterations intended to show the learning from the findings in order to validate my research. The iterations include reflections on my mixed role, including my objectives, intentions and ethical considerations. The iterations finished with a conclusion that presents the findings. The iterations explored the issue formulated in the research questions and opened space for the consideration of new problems to be solved, which inspired me to further research. I have tried to validate the iteration (Pedersen et al., 2012, p. 210). I have tried to be transparent by giving readers access to the research design, the prerequisites and the results (Brinkmann & Tanggaard, 2010, p. 491).

4.7.2 REFLECTIONS ON THE DBR FLOW

Below, I will reflect on the new DBR flow that I invented in section 3.4. I will reflect upon the process I went through in chapter 4, starting with the context and continuing with the next seven elements in the sequence.

Context

During the seven years of PR development, important social aspects changed: new power structures appeared caused by globalization where the divisions became more powerful than local colleagues, with the consequence that the divisions tended to be more isolated from each other. This organizational development increased the need for cross-divisional PRs.

During the seven years, the top manager (CEO) of the global IT company EMEA changed, and the new CEO was less interested in learning from experience. Consequently, the awareness of PR declined and the number of registered PRs decreased.

The organizational structure changed at least once a year, for example, I had four managers within the first three years as Manager of Organizational Learning for EMEA.

The critical organizational competences changed as working online became a crucial skill that everybody needed to learn, most of us from scratch. Therefore, the skills needed to participate in online PRs had to be described, and the facilitators needed to be able to train the participants before the online PR took place.

Problem identification

The starting point of the iteration is a problem formulated as a question. This PhD thesis includes four iterations after the development of PRs in the global IT company, and two iterations

were brought to life by this PhD study. The first article includes two iterations.

The problem identification in a PR is identified by the employee that asks for the PR. This problem is discussed with the employee's manager because the manager is going to be responsible for the implementation of the solutions suggested in the PR. The facilitator helps the manager formulate the problem as a question; thus, 'What is the purpose of this PR?' is formulated as a question by the manager to be answered by the participants.

Theoretical considerations

The iterations included new theory that enabled me to explore the problem, and the theory provided a lens for studying the conditions of the situation. Furthermore, the theory supported the formulation of a working hypothesis or a suggestion for a solution by offering arguments for its suitability.

Mixed Methods and Data

This study lasted seven years, which made it possible to utilize various methods like traditional research interviews and observations and non-traditional methods like future workshops and diaries. These mixed methods supported my intention of looking at phenomena through different lenses and from different points of view. In this regard, I found Schraube's three perspectives very useful.

From the very beginning of this PhD study, I utilized Schraube's three perspectives in relation to the data in order to distance myself in my role as Manager of Organizational Learning and my role as researcher. The awareness of the first person perspective enabled me to focus on unsolicited feedback where I only 'listened' to the thoughts and emotions of the people under study without unrest caused by my role as Manager of Organizational Learning for EMEA. The second person perspective made it clear how important it was to influence the interviewed people as little as possible; consequently, some of the interviews were done by email in order to keep myself out of the sphere of the interviewees. The third person perspective made me realize the continuum of participation from being 'God's eye' to 'total participant', and my role changed within this continuum.

The development of PRs took place in a certain global IT company classified as big business. The upside was the easy access to the relevant people and my in-depth knowledge about the organization regarding its history and social aspects. The downside was that research in this context may not fit into another context because they are by nature different. The sample may be

perceived as narrow; on the other hand, this global IT company has a presence in 61 countries and has many divisions in EMEA. People in more than 40 countries have been actively involved in the development and implementation of PRs. The amount of data is huge and I have thoroughly considered the samples for the iterations in order to learn about the phenomenon I studied.

Analysis

I have utilized different aspects throughout the five iterations. The *cognitive level* demonstrates how the learner changes his/her understanding as a result of the learning, which is aligned with the results of the PR (being new actions to be carried out) described in the action and communication plan. The *interpersonal level* illustrates the development of relationships, respect and knowledge sharing between the participants and the facilitator in the PR. The articles have described both successful and awful situations in this regard. The *group dynamics* revealed domination, submission, lack of participation and common engagement in different PRs. The *institutional level* indicated solid support from top management whereas middle managers needed to be convinced to start and maintain PRs.

Variables

The variables were divided into several categories, namely 'climate variables', 'outcome variables', 'resource variables', 'the setting' and 'the nature of the learners'.

The resources developed over time. In the pilot project, only a few slides were available, whereas a rich website was accessible in 2011. The requirement for online PRs raised a demand for the professional development of the facilitators and the participants. The communication was mediated by technology which the participants needed to master. The facilitators attended additional training for professional development, whereas the participants were offered 30 minutes of technology training in order to master the technology used for online PRs. I have not dwelled on the costs of PRs because of the lack of data. I did not have a budget.

Because I have focused on the processes for learning in the context of work rather than on the results, the *outcome variables* have been used less than other variables. However, I have utilized the *outcome variables* by inquiring about the participants' learning strategies, and I have added the question 'What was your personal highlight from this PR' to initiate meta-reflections on the learning process. For example, in the pilot project, Paul said '*This AAR has helped me define what caused*

problems during the bid. It also helped me define actions that need to be undertaken' (Paul's diary), and Janet stated *'It was very important for me to hear the ideas of the other delegates and I was asked to share my dreams*' (Janet, interview in the article 'Prerequisites for dialogue…').

I have commented on the *climate* variables by looking into the participants' engagement, cooperation and risk taking, and because I was so interested in Ba and what affected Ba, climate variables have come into play in all iterations.

I have only very briefly described the variable called *the nature of the learners* because age, sex and education did not seem to be important for the way the participants attended the PRs; at least, potential differences did not occur to me. But the position in the hierarchy had an impact; therefore, the code of conduct allows for a maximum of three hierarchical levels to be present in the PR.

My mixed role and my pre-assumptions

My mixed role as researcher and employee of the researched organization may have influenced the research negatively by reducing the quality. In order to enhance rigour, I have reflected on my pre-assumptions. I had the pre-assumption that I would have to deal with different perceptions of knowledge, namely knowledge as a commodity that can be described and measured and knowing in the sense of a process affected by historical and social aspects. I was right, as I had to deal with both aspects, and over the years I tried to connect these aspects.

I had the pre-assumption that experience is not innocent and that the management would like to intervene in the learning process. This turned out to be wrong, as the managers sometimes wanted to participate in the PR. However, they were willing to withdraw themselves when we talked over the implications of their participation. Only very few times did I come across a manager who would not stay away from the PR, and I used these rare situations as exercises in the PR training course.

A pre-assumption of mine was that the internal competition was an obstacle for building trust. I saw the requirement of trust as an obstacle for the implementation of PR in the global IT company. More specifically, top management needed to trust my suggestions for the educational design and they needed to trust in me in order to accept my recommendations. Middle managers needed to trust the requirement for PRs in order to accept staying out of the PR meeting, and they needed to trust their subordinates in order to accept the action and communication plan that

provided suggestions for changes the middle managers were supposed to implement. The participants needed to trust the facilitator in order to follow the flow of seven questions and to be brave enough to doubt or not know. The facilitators needed to trust me in order to learn and perform PRs as described by me. And I needed to trust everybody in order to continuously develop and implement PRs while being aware of some of my pre-assumptions that might collide with the mainstream assumptions in the global IT company. This widespread need for trust was met, and I still wonder how and why.

My pre-assumption of emotions being suppressed in the work place has been challenged through the development of PRs and through this PhD study. In the global IT company, I experienced the expression of emotions. As Dan explained, *'A benefit from the AAR is to get rid of frustration, stress etc.'* or in observations where I noted '*Quarrel: Blaming, defending, shouting, smiling and nodding, big arm movements, looking to the ceiling*' as expressions of emotions. I cannot say to what extent emotions were supressed, but my pre-assumptions turned out not to fit with reality, as the data revealed that lots of emotions were expressed during PRs.

Reporting this DBR
Internally, the development of PR was reported continuously in internal newsletters, in the PR facilitator community, on the PR blog, etc. Externally, the development of PR was reported at conferences over the last few years, in articles, as a chapter in a book and as a book on its own. Finally, this PhD thesis could be seen as a report on the development and reflections of PRs.

4.7.3 POSSIBLE SHOW STOPPERS FOR PROACTIVE REVIEW

The literature presents various obstacles to creating trust and establishing dialogues in the context of work. This PhD study has explored some of these obstacles to dialogues, which may be obstacles for PR as well. From a practitioner's standpoint, it may be useful to know what the show stoppers are for PRs. Therefore, this section will discuss these possible show stoppers.

In the article *Prerequisites for dialogue*…., we found that lack of support from top management would stop the delivery of management challenges, but it would not necessarily prevent PRs from continuing in the organization.

Power distances within the organization may prevent the participants in a PR from addressing a management challenge they find controversial. If the top management does not react to

management challenges, the participants may doubt if it is worth the time and effort to create management challenges, and the top management misses important information from the 'grass roots'. Thus, necessary changes may not be defined or implemented, which may have a negative impact on the work practices, services or products and consequently on the bottom line.

The sponsor may 'forget' to implement the action and communication plan, and the participants may feel rejected and may hesitate to take the risk of sharing their experiences and suggesting solutions to identified problems again. In addition, the team and colleagues on other teams may suffer from the lack of changes suggested in the PR, and the lack of changes may prevent the development of work practices, services or products, leading to a weaker financial performance.

The online PR is weak in terms of confidentiality and a caring atmosphere. Therefore, the dialogue may be more superficial and the results less innovative or powerful. If weak confidentiality in online PRs is not addressed, the participants may not dare to doubt or 'not-know', and the point of the PR process will disappear.

If a manager tries to make PR serve the purpose of creating commitment to changes he has already decided upon, the participants may feel manipulated and the organization will miss the commitment to the creative solutions developed collaboratively by the participants. If PRs are utilized to implement the manager's solution, it will ruin the concept.

4.7.4 SURPRISES

The invention, the development and the implementation of PR in the global IT company has been a voyage to unknown territories where I faced mysteries and gained experience. In this section, I will reflect upon the most positive experiences, namely the surprises that I faced.

From the beginning of the pilot project I was aware of my dependence on the voluntary participation and contributions of my colleagues in order to succeed, not only during the pilot project but for as long as the development lasted. I did not have a clue that the development of PR would continue for seven years. The rich collaboration between me and my colleagues has been a surprise. I did not expect so many colleagues to invest time in PRs, and I certainly did not expect them to volunteer for future workshops and to spend their spare time developing solutions to new requirements, such as online PRs. Perhaps the reason is that

employees at all levels in this IT company are eager to learn, and they grasp the learning opportunities they find challenging.

When I learned about AARs, I reflected on the context of the process—surviving combat situations. It was easy to understand that the participants in AARs were eager to learn. The global IT company was not that dangerous, and I considered if the employees would be willing to risk sharing doubts or admitting mistakes in such a competitive environment. Therefore, it was a surprise that the participants in PRs had the courage to share doubts and uncertainties, as well as dreams. They showed courage and open minds, which I did not expect in this very competitive global high-tech company.

The tangible and intangible results of a PR are founded on the trust between the participants, between the participants and the facilitator and between the participants and the sponsor. As most of the PRs involved cases with a negative result, it was concerning to me whether the participants would be able to create an atmosphere of love, trust and care. The high level of trust and honesty in face-to-face PRs has often surprised me. This high level of trust enabled the participants to come up with 'weird' ideas for solutions that were adapted to the historical and social aspects of the IT company. I was often astonished by the creativity and willingness to risk rejection by the sponsor and by top management.

In the beginning, I doubted if the managers would accept suggestions for changes that they had not contributed to (as they did not attend the PRs). I was also aware that if nothing happened after the PR the employees may think of their participation as a waste of time. Therefore, I was surprised that the managers did not expect a 'right' answer that there were few rejections. Most addressed management challenges led to organizational changes, and most action and communication plans led to local changes in work practices and/or services.

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5 CONTRIBUTIONS

'An important aspect of organizational learning and knowledge sharing studies has been based on the idea that through knowledge sharing between individuals Organizational Learning will occur. However, a clear explanation of the process is not available.' (Abbariki, 2013).

This PhD study has provided such an explanation, and in this chapter I will present the contributions to the research field in terms of theory, methodology and practice. This chapter will not follow the five iterations, but go across them in order to identify the contributions. The theoretical section will reflect on the spiral as a metaphor for organizational learning, and I will discuss ontological dimensions of learning. The methodological section will reflect on the DBR utilized outside the classroom, and I will reflect on the longitudinal study lasting seven years. Furthermore, I will discuss the contributions to practice made by this PhD study.

5.1 THEORETICAL CONTRIBUTIONS

'I want theory to "do real work". I want theories that work' (Anderson & Shattuck, 2012, p. 17).

In this section, I discuss how this PhD study contributes to the research field of organizational learning and organizational knowledge. First, I explain how this PhD study approaches organizational learning from a learning perspective. Next, I briefly reflect on the educational design of PR, followed by a discussion of

the spiral as a metaphor for learning in the context of work, and I present the latest version of the organizational learning spiral. Afterwards, I discuss the ontological dimensions of organizational learning included in this PhD study. Finally, I suggest 'dialogue' is the foundation for learning in the context of work and describe how this term contributes to the research field. My intention is to deliver theories that work.

5.1.1 PERCEIVING LEARNING IN THE CONTEXT OF WORK

The originality of this study stems from approaching *organizational learning from a learning perspective*. According to Brandi and Elkjaer (2011), Danish research has focused on individual learning as the basis of organizational learning and has not taken the team or the organization into account (p. 73).

This PhD study argues that learning in the context of work may be *initiated by anyone* within the organization in contrast to learning initiated by the managers. This study has pointed out the importance of having a *learning strategy* in the organization and has found that a blend of top-down, middle-down and middle-top-down strategies is a suitable learning strategy. 'Who initiates learning' reflects the learning strategy of the organization. If only top management initiates the learning process, the strategy is top-down. If the middle managers mostly initiate the learning process, the strategy is middle-down and if top management approval is needed, the strategy is middle-top-down. If only the employees at lower organizational levels are allowed to initiate learning processes, the strategy is bottom-up. When any employee is allowed to initiate PR, the strategy is a blend of top-down, middle-down and bottom up strategies.

In this PhD study, learning is based on *experience*, in contrast to learning founded in training programs. The *content* to be learned should be applied to 'things', meaning improved work practices, services or products, which is different from the understanding of learning as a matter of improved competences.

This PhD study explores learning between individual employees, their team, their colleagues outside the team and the organization, and it gives examples of learning between organizations. I will return to this below.

This study provides *an educational design for learning in the context of work* where the starting point is experience, whether positive or negative. The seven questions enable the participants in PRs to '*experiment with the world to find out what it is like'* (Dewey & Boydston, 1976, p. 147) by asking 'What happened and

why?' and 'What should we do next time?' In discussing the first question, the participants negotiate a common meaning of the past, and the question allows them to share emotions as they explain what they enjoyed or suffered from. The second question enables the participants to consider what they do to things and to put forth tentative suggestions for solutions. They gain experience by thinking and talking. When they implement the solutions described in the action and communication plan, they gain new experience again with the interaction between thinking and doing.

This PhD study explores *'who' is supposed to learn* in the context of work and found that any employee may contribute to organizational learning by participating in PRs. More specifically, the participants in a PR are the employees that have solved a task together. In contrast to traditional task forces or expert panels, the employees are not necessarily experts, and they are only identified as participants in the PR because they collaborated on a case that was important enough to learn from in a PR.

5.1.2 THE EDUCATIONAL DESIGN CALLED PROACTIVE REVIEW

The seven open questions in a PR constitute an educational design for organizational learning, and PR may be seen a theory that works. At least PR survived over many years in a global IT company. Further research may show that PR is useful in other organizations as well. This PhD study includes an educational design for collaborative learning in a face-to-face setting as well as in an online setting.

5.1.3 DISCUSSING THE SPIRAL AS A METAPHOR FOR LEARNING IN THE CONTEXT OF WORK

Nonaka and Takeuchi (1995) described knowledge creation as a spiral in the SECI model. Engeström (2001, 2003, 2013) described expansive learning as a spiral. They placed the metaphor in the context of work. Miettinen (2000) interpreted Dewey's description of reflective thought and actions as a spiral.

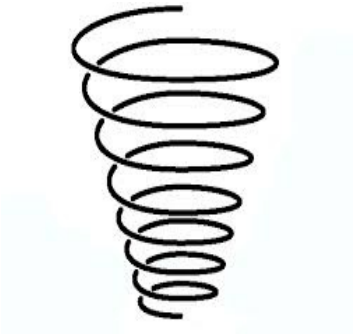

Figure 8. A spiral

None of these theorists have explained the implications of the metaphor of a spiral. The spiral has a centre, where it begins. None of the theorists refer to this centre, but I understand this *centre to be the starting point* of the organizational learning process. The starting point varies from one theorist to the other; thus, disturbance or uncertainty prompts the process of thinking according to Dewey (Miettinen, 2000), whereas internal conflict or historical-based contradictions prompt the learning process according to Engeström (2001) and a problem prompts knowledge creation according to Nonaka and Takeuchi (1995). Nonaka and Takeuchi (1995) emphasize that middle managers initiate organizational knowledge creation as they know what is important for the business. Nonaka and Takeuchi focus on 'who' initiates, whereas Dewey and Engeström focus on 'what' initiates the learning process. There is no consensus about the starting point of the spiral.

This study provides insights about the starting point of the learning process. *'Who' starts up the process of organizational learning*? According to the theory behind PR, any employee, no matter his/her position in the formal organizational hierarchy, may initiate a PR. I have presented cases initiated by local knowledge managers, employees, middle managers, country managers and top managers.

It is an invention to start the learning process based on a *positive experience*. According to Dewey (1976), Nonaka and Takeuchi (1995) and Engeström (2003), 'what' starts the learning spiral may be a problem, a disagreement, a contradiction, a disturbance or uncertainty, all being negative experiences. PR has revealed that a positive experience, such as a successful deal or implementation, may be the starting point for organizational learning. Consequently, 'to learn from experience' means to learn from *both positive and negative experiences*. Even more so, the

online PRs indicated that the participants and the organization seem to benefit more from learning from a positive experience compared with learning from a negative experience.

It is an invention to define 'when' to start up the learning process of organizational learning. The theorists mentioned in this study implicitly suggest learning from experience in the sense of something that has already happened. The point of departure is in the past. The example of 100% growth in the article about online PR presented a situation where the PR was used proactively to plan for 100% growth. 'When' moved the starting point of the learning spiral from looking at the past into exploration of the unknown in order to stimulate innovation for a preferred future.

The spiral unfolds from the centre in an increasing cyclic form that is infinite. If the spiral is only in two dimensions, it will grow in diameter. If the spiral is in three dimensions, it may go up or down and it may or may not increase in diameter. The metaphor of a spiral raises several questions: What makes the learning process continue from its start in the centre until infinity? What makes the learning process grow or diminish? How is it possible to diminish the learning process? How could we perceive the infinity?

If we look upon an organizational learning spiral in three dimensions, we may move both up and down. What makes the learning process grow or diminish? According to Engeström (2001, 2013) and Nonaka and Takeuchi (1995), the learning process may move up the spiral when the organization improves its ability to solve tasks. But how is it possible to stop or slow down the process? The theorists agree that the process can be stopped by, for example, NOT utilizing their theories or prescriptions. The process may be slowed down by the lack of dedication from top management, especially if learning and knowledge creation is not an integrated part of the strategy (Akhtar & Khan, 2011; Nonaka & Takeuchi, 1995; Vera & Crossan, 2003; von Krogh et al., 2000; Engeström, 2001). The process may also be slowed down if the participants do not have tasks to achieve (Engeström et al., 2013; Nonaka & Takeuchi, 1995) or if the participants do not contribute on an equal basis by breaking down hierarchical power as much as possible (Engeström et al., 2013). The organizational learning moves down the spiral when it loses knowing or experience, for example, when important employees leave the organization and take their experience and knowing with them.

This discussion of the spiral is a contribution to the research fields of organizational learning and organizational knowledge.

Infinity means that the organizational learning continues until the organization no longer exists. Infinity raises methodological

questions about when to stop DBR. This will be discussed further in the section titled 'Methodological contributions'.

5.1.4 LATEST VERSION OF THE ORGANIZATIONAL LEARNING SPIRAL

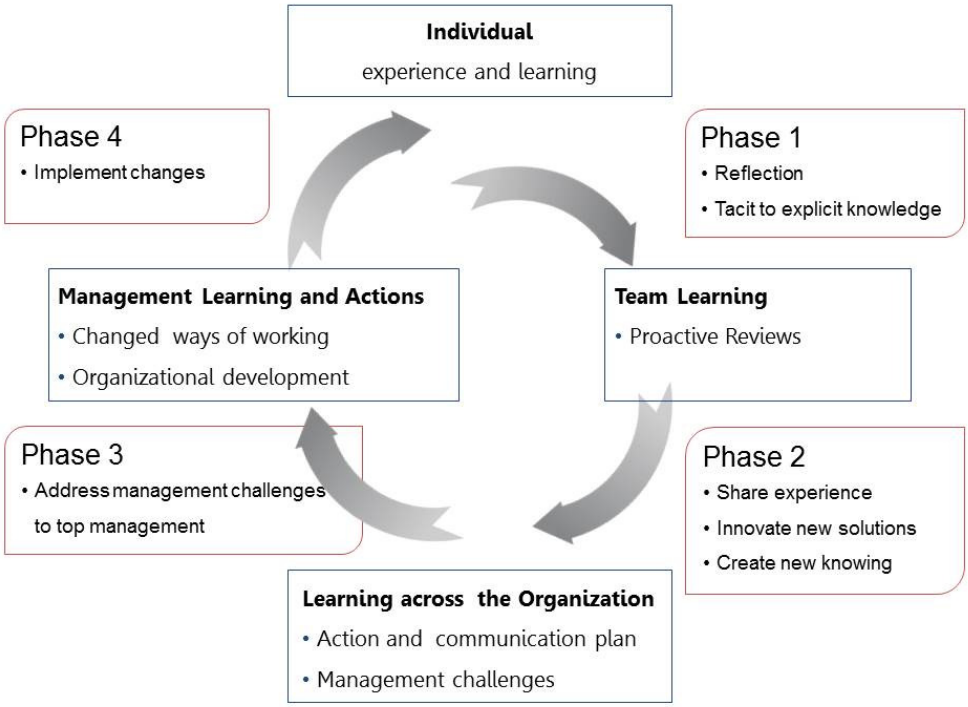

Figure 9. The organizational learning spiral (my own making)

Prior to 2013, I did not know about Miettinen's work on Dewey's theoretical concept of reflective thought, but I was familiar with the SECI model (Nonaka & Takeuchi, 1995) and Engeström's theory of expansive learning. Over the years, the spiral has been changed according to new requirements, and the format of PR has changed from six to seven questions. When I look at the latest version created for an article in April 2014, I can see that I need to change it again. The newest version is presented below.
Figure 9 depicts the last version of the organizational learning spiral. The organizational learning spiral consists of four phases

describing the actions that lead to learning, which are displayed in the boxes. The starting point for the organizational learning spiral is experience gained from doing a job. The learning process begins with an individual's experience and learning from work situation(s); thus, the top box has to include both 'experience and learning'. Previously, it only included 'learning'.

Phase one illustrates the reflections and the change of tacit knowledge to explicit knowledge that occurs when the participants formulate the obstacles and enablers for doing the job successfully. These reflections are initiated by the invitation to the PR that includes the purpose of the PR formulated as a question asked by the sponsor. I have kept 'knowledge' as the term here to be loyal to Nonaka and Takeuchi, even though we may discuss whether I should call it 'knowing'. The purpose of the PR should be formulated as a question which should be answered by the participants in the PR, and this requirement has not been described earlier.

Phase two includes the PR itself. Here, I will dwell on the question: 'What happened and why?' This takes the historical background and social aspects into account and enables the participants to collaboratively form hypotheses and/or to come up with solutions to the question 'What should we do next time?' By doing so, they create new knowing. One may say that the PR leads to new experiences as the participants connect their ways of acting with the consequences of these actions. This is a conscious move from the past to the future. The description of the historical background and social aspects are new. The distinction between knowledge and knowing is new, and in this version of the learning spiral, the participants create knowing perceived as a process rather than as a commodity.

Phase three is initiated by one of the tangible outcomes from the PR, namely the action and communication plan that enables new knowing and the solutions to be spread horizontally across the organization when the participants implement the solutions for close colleagues and the sponsor provides the solutions to relevant peers.

Phase four is initiated by the addressed management challenge that enables vertical organizational learning as the top management learns from all levels in the organization no matter the hierarchical structure. When the top management initiates and implements changes to work practices or organizational development according to the addressed management challenge, employees adapt to these changes and everybody moves along the spiral. It is a new invention that the management challenge

enables employees at all levels to have direct access to top management with no interference from the organizational hierarchy.

The distinction between horizontal and vertical organizational learning is new in relation to the PR learning spiral. Figure 9 shows new inventions in the fields of organizational learning and organizational knowledge. It is an invention that the starting point is an experience that may be positive or negative. It is new that the starting point may be experience gained in the past, or alternatively it may be a vision for a favoured future. It is an invention that the sponsor formulates the problem to be solved as a question to be answered by the participants. This question sets the direction of the dialogue throughout the PR. The selection criteria for participating in a PR are inventions; the participants are invited because they solve a problem together. That is the only qualification that is important because no one is excluded from PR in general, and everybody except the team members are excluded from specific PRs. The participants have prepared for the PR before attending by identifying obstacles and enablers to achieve the common task of the participants. The tangible outcomes of a PR are inventions. The first tangible outcome is the action and communication plan that ensures horizontal organizational learning. The second tangible outcome is the management challenge that ensures vertical organizational learning.

5.1.5 DISCUSSING THE ONTOLOGICAL DIMENSIONS

According to Gherardi (2001, p. 132), learning '*cannot be divided up among different scientific disciplines to produce areas of individual, group, organizational and inter-organizational learning'*.

The SECI model (Nonaka & Takeuchi, 1995) covers four ontological dimensions—individual, group, organizational and inter-organizational learning. The metaphor of the ripple effect of a PR indicates that the four ontological dimensions of organizational learning are interwoven because in attending a PR, the participants and the team learn from common experiences, the action and communication plan enables the middle managers and peers from other teams to learn from the PR and the addressed management

challenge makes the top management learn. Resolved management challenges lead to learning throughout the organization. When external parties are invited to a PR, they learn from the common experience and inter-organizational learning may occur. The individual participant is placed in the middle, which makes him/her an integrated part of the other dimensions. The ontological dimensions seem to be completely interwoven.

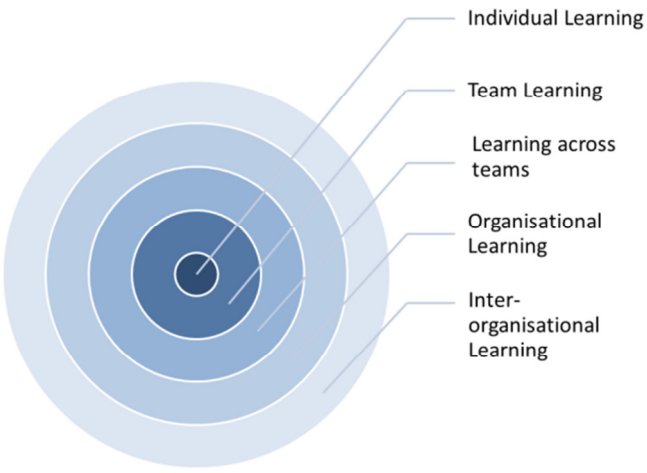

Figure10. The ripple effect of a Proactive Review

The different spirals presented in this kappa seem to present different ontological dimensions: Dewey's (1976) learning spiral is based on individual learning, whereas Nonaka and Takeuchi's SECI model (1995) is based on individual and team learning. Nonaka and Takeuchi (1995) claim that the SECI model may be used for organizational and inter-organizational learning as well. Engeström's (2001) model of expansive learning is based on organizational learning. The PR organizational learning spiral is an attempt to present an educational design for organizational learning connecting three ontological dimensions—individual learning, team learning and organizational learning. Even though PR may include external parties, leading to inter-organizational learning, the PR learning spiral does not illustrate this ontological dimension.

5.1.6 DIALOGUE AS THE FOUNDATION FOR LEARNING IN THE CONTEXT OF WORK

The theorists agree that conversation and interactions make the spiral process continue. But they do not explain the requirements for a rich dialogue. This study explored obstacles and enablers for rich conversations and defined 'dialogue' as a suitable term when it is based on codes of conduct. The contribution to the research field is the well-described term of dialogue as the foundation for organizational learning.

It is an invention to define 'dialogue' and describe the term in detail in order to understand and utilize 'dialogue' as the foundation for learning in the context of work. Prerequisites for initiating and maintaining dialogues are 1) participant equality, 2) empowerment of the participants, 3) trust and 4) a caring atmosphere.

In order to make the participants equal, the codes of conduct state that no more than three hierarchical levels should be represented in a PR and that it should be discussed whether the sponsor should participate. The limitation of hierarchical levels excludes top managers from most PRs, and the absence of direct managers means that they have to accept not intervening in the problem solving but empower the participants to solve the problem and accept and implement the solutions suggested in the PR. We see that the management gives power to subordinates who are empowered participants in a PR. At the same time, management is obliged to implement the solutions they have not contributed to. This distribution of power as a foundation for learning in the context of work is a contribution to the research field.

The development and implementation of PR was based on trust between all stakeholders, as discussed above. The participants showed a high level of trust by sharing doubts and uncertainties as well as weird ideas and dreams for the future. The middle managers showed a high level of trust by accepting not to participate in the PR and by implementing the action and communication plan delivered by the participants. The top management trusted the educational design to the extent of including it in the three-year vision and the facilitators showed trust by sharing concerns, failures and positive experiences with fellow facilitators in the PR community and by addressing the management challenges with managers at much higher organizational levels than themselves. Could this high level of trust be established in any organization and would it be worthwhile to include 'trust' in future research? The examples of trust and the reflections on trust presented in this PhD thesis contribute to a

better understanding of the term trust in the research field of organizational learning and organizational knowledge.

In order to establish and maintain Ba, a large number of PR facilitators were trained over the years. Most of them continued as members of the PR facilitator community. The participation here was not a part of their everyday job but a voluntary activity. It is an open question if employees in other global high-tech companies would invest their private time in such an activity and if other global high-tech companies would invest so much time and money in the development of facilitators.

5.2 METHODOLOGICAL CONTRIBUTIONS

This PhD study contributes to the research field of DBR as the data were gathered over a period of seven years. There is a lack of longitudinal DBR research agendas, according to Anderson & Shattuck (2012, p. 18).

This PhD study contributes to the field of DBR because it has taken place in EMEA, whereas there is a *'predominance of publications using DBR that originated in the United States'* (Anderson & Shattuck, 2012, p. 20).

5.2.1 CONTEXT AND CONTENT TO BE STUDIED

To utilize DBR in the context of work is an invention, as DBR has mainly been used to explore training in classrooms. Both the context of work and the classroom may be perceived as authentic learning environments.

The role of the researcher in this PhD study has been different from the role of the researcher in traditional DBR studies, where the researcher does not teach. In this study, the researcher has been teaching. The mixed role enabled the researcher/teacher to identify problems in the educational design based on her own experience. Furthermore, the PR facilitator community shared experiences with the educational design and the collaboration between the researcher/teacher and the PR facilitator community led to the development of the educational design and made it easy to implement the changes throughout the 40 countries involved.

It may be an invention to utilize DBR to study learning processes rather than content or measurable results, as most DBR studies examine the content of teaching, according to Anderson and Shattuck (2012, p. 20). PR may be applied to whatever content exists in an organization. This PhD study includes PRs of IT system implementations, won and lost bids, IT projects and the hiring process, which are all very different. Even though the

participants increased their knowledge of the content, this PhD study utilized DBR to look into processes leading to learning. The learning results were only measured briefly (annual reports shown in 'Dialogue as foundation'); rather, the learning results were applied to 'things', meaning improved work practices or services.

It may be an invention that the 'teacher' is unfamiliar with the topic or content of the learning process. In PR, the facilitator is not supposed to know the content inside out. Preferably, the content is new to the facilitator so that he/she can stay neutral throughout the PR.

To utilize DBR for learning online in the context of work is an invention. The development of PR includes seven years of the history of the global IT company that changed from being a multinational to a being a global organization where employees increasingly work across country boarders and online. This history had an impact on the development of the educational design, for example, the change from meeting face-to-face to attending PRs online.

5.2.2 THE NEW DBR FLOW

It is an invention to suggest a sequence of nine steps that describe the new DBR flow that changed the original guidelines provided by Collins et al. (2004). The new DBR flow adds 'theoretical considerations' to support the development of a new design, 'educational design x' to distinguish one iteration from another, specific considerations on 'methods and data collection', fewer 'variables', 'how stakeholders and the researcher worked together' and 'conclusions' that include the contributions to the research field. This DBR flow was followed consistently through the PhD study, as discussed in chapter 4, and it seems to be useful for studying learning in the context of work. It may be discussed if the many changes in the guidelines changed the DBR method as such. I will argue that the changes made the DBR methodology more rigorous.

5.2.3 REQUIREMENTS FOR 'GOOD' DBR

Requirements for 'good' DBR are an invention inspired by Dede (2004) and Engeström (2011). DBR has been heavily criticized by Dede (2004) and Engeström (2011), which motivated me to develop requirements for 'good' DBR when DBR is used in the context of work. The requirements for 'good' DBR are heavily inspired by my impression of the requirements for 'good' science,

as described in chapter 3, along with Elkjaer's considerations on learning in the context of work from 2003. The requirements for 'good' DBR are developed in the beginning of this PhD study; therefore, they were not the foundation of the data gathering. However, I have stuck to these requirements all the way through the study.

5.3 CONTRIBUTIONS TO PRACTICE

When an organization decides to learn consciously from experience, it needs an educational design. PR is an educational design that has proven its sustainability by surviving in a global IT company for many years and spreading out to most lines of business and to more than 40 countries in EMEA. Over time PR, has become a method, relatively stable despite the iterations, and it has been socially recognised throughout the organization. PR has become a practice itself. 'The Proactive Review has become a part of the organization's DNA', as a senior vice president put it. By participating in this practice the delegates become knowledgeable not only about PR but also about common issues. The practice of PR is an invention.

Below, the practice of PR is described in more detail.

5.3.1 THE FOUR ROLES IN A PROACTIVE REVIEW

This PhD study contributes to practice with a description of the roles involved in PR. The roles are participants, sponsor, top management and facilitator. They have different obligations in regards to PR. The participants, the sponsor and the facilitator must prepare for the PR. The participants formulate their individual obstacles and enablers to achieve the common objective. The sponsor defines the problem and formulates this problem as a question to be answered by the participants in the PR. The sponsor and the facilitator decide whether the sponsor should participate or not and the facilitator prepares for the physical or virtual setting, taking into account if the starting point is a positive or negative experience. To ensure a fruitful process, the facilitator conducts the PR. The top management includes learning in the strategy, empowers the participants in the PR to create solutions and addresses management challenges. The top management handles the management challenges and communicates processes and solutions to relevant employees throughout the organization. Table 8 shows the roles and the obligations of each.

Table 9. Roles and obligations in a Proactive Review

Roles in a PR	**Obligations**
Participants	Prepare for the PR by identifying obstacles and enablers to achieve the common objective.
Sponsor/ Manager	Prepares for the PR by formulating the purpose of the PR as a question, identifies the participants and discusses and decides the manager's participation with the facilitator. The manager may or may not participate. Provides time and space for the PR. Follows up on the PR by implementing the action and communication plan.
Top management	Includes learning in the strategy and provides the necessary resources like education for facilitators and objectives for learning, for example, targets for the identified management challenges. Receives the management challenges, finds solutions and communicates processes and results of the solutions to relevant employees at all levels.
Facilitator	Prepares with the sponsor and supports him in formulating the question to be answered. Prepares with the co-facilitators (if applicable). Prepares for the PR, focusing on the setting (physical or virtual) and the content/subject to be discussed. Maintains Ba, codes of conduct, the agenda of seven questions and manages time throughout the PR. Ensures the participants deliver the action and communication plan to the manager. Ensures the management challenge is addressed by top management. Debriefs co-facilitator.

The definition of the four roles in an educational design for learning in the context of work and the description of the obligations of the four roles in a PR are new inventions.

5.3.2 THE OUTCOMES OF PROACTIVE REVIEWS

The *tangible* outcomes of a PR are the action and communication plan and the management challenges. The management challenges are a new invention that enables employees at all levels to have direct access to top management. Therefore, the management challenges are addressed with no interference from

the organizational hierarchy and are independent of the perspectives of the middle managers included in the PR.

PR delivers *intangible* outcomes like increased and new knowing, less tension because frustrations have been addressed and solved, increased team spirit, relief and the ability to see the obstacles and enablers from others' perspectives.

The tangible and intangible outcomes of PRs lead to improved products, services or work practices. These outcomes are integrated parts of the practice called PR.

5.3.3 ORGANIZATIONAL REQUIREMENTS

This PhD study revealed organizational requirements for implementing PR. These requirements include learning as a part of the strategy, targets for the minimum number of PRs conducted in the organization (including expectations regarding the numbers of addressed management challenges) and communication about processes and solutions to management challenges to relevant employees in the organization. The organizational requirements were brought to life during this PhD study, and they seem relevant for more organizations than just the global IT company. I perceive these organizational requirements as a contribution to practice.

5.3.4 CODES OF CONDUCT

It may be an invention to suggest codes of conduct for learning in the context of work. Some codes of conduct were developed as a consequence of bad experiences through the pilot project. Others were brought to life during this PhD study. The pilot project resulted in the following codes of conduct: 'we are here to learn', 'no blame' and 'everything said in a PR is confidential'. Codes of conduct brought to life by this PhD study include 'everybody contributes on equal terms' and 'respect the people who participate in the PR'. These codes of conduct are an invention and are an important part of the practice of PR.

Premature codes of conduct were described already after the pilot project, and these codes of conduct were mentioned in the invitation for the PR so that the participants were aware of the expectations to their behaviour. The first and the most important code of conduct was 'we are here to learn', which turned out to be a very powerful statement that could ease the tension between participants. I wonder if such a simple statement would be perceived the same way in other organizations.

5.3.5 BA

This PhD study has utilized Ba to focus on the physical and mental settings for PR in order to establish and maintain a caring atmosphere even if the starting point may be a negative experience. The physical and mental settings are equally important.

The physical context includes the geography, the setting of the room and the tools in use. As the physical setting, the ICT and the atmosphere frames the PR, it becomes important to adapt these matters to the initial emotions of the participants, who may be disappointed or frustrated because of a negative experience, or they may be excited and happy because of a positive experience. It is recommended that the participants be able to walk around and to shift between standing and sitting, especially if the starting point is a negative experience; and it is recommended that the participants in online PR start up by indicating in a poll how satisfied they are with the result they achieved together. The poll gives a quick overview over the alignment within the team, and it shows to what extent the participants stat up on a positive or negative note.

I think it is an invention to suggest a physical or technical setting that is dependent on the emotions of the participants when they start the learning process, and maintaining Ba is an important part of the practice of PR.

5.3.6 IDEAL REQUIREMENTS FOR THE FACILITATOR

The facilitator must be held in esteem by peers, subordinates and managers because the participants must trust the judgement of the facilitator when he/she interrupts, concludes or addresses an issue. The ideal requirements for a facilitator include the ability to initiate and maintain Ba, keep time, draw conclusions, involve all participants, ensure respect of the historical background and social aspects and follow the codes of conduct. It is not a task for everybody, and this description makes this explicit. The overview of the different requirements may be new, and the ideal requirements are a contribution to practice.

5.3.7 EDUCATIONAL DESIGN FOR ONLINE PROACTIVE REVIEW

The description of online PRs includes suggestions for technology that support the process of reflection and the process of

innovation. The facilitator decides the technological setting that fits the participants best, and in order to do so the facilitator needs to consider technological obstacles like different bandwidths in different countries, physical obstacles like sore ears when the participants are on the phone for too long, obstacles to being reflective like disturbances from outside, obstacles to being innovative like being alone and obstacles to creating trust like no pictures of the participants or a lack of online codes of conduct. These considerations support organizational learning and contribute to practice.

5.4 DOES PROACTIVE REVIEW FIT IN OTHER ORGANIZATIONS?

I do not know if the managers' acceptance of staying away from PR would be an option in organizations other than this global IT company or why this was so easily accepted. The high level of trust throughout the IT company still surprises me. I was allowed to develop PRs over seven years, including iterations and changes that involved the participants, their managers and the facilitator. The top management received the management challenges and started to solve the problems without asking the relevance, which made it possible to learn across organizational hierarchies. It is still an open question if this would be the case in all organizations.

The tangible outcomes of the PR included new concepts and solutions that were accepted by the sponsor and by senior managers. Perhaps this bottom-up learning strategy would not be accepted in all organizations. In addition, anyone in the IT company could suggest a PR. This mix of bottom-up, middle-top-down and top-down strategies might not fit in all organizations.

5.5 WHOSE INTERESTS ARE BEING SERVED BY PROACTIVE REVIEWS?

PRs enable the *top management* to be aware of important organizational obstacles or challenges in achieving strategic objectives, and PR contributes to increased efficiency by avoiding repeating mistakes and repeating successes. PR supports the financial results by improving products and services that may lead to enhanced customer satisfaction. Let me quote a senior vice president who had the overall responsibility for knowledge management in 2005 and who wholeheartedly supported the development of AARs into PRs. He said: '*Why KM? It's just plain*

obvious. KM increases the exchange of ideas; this turns into better products, better services, better selling, better delivery, more revenue. And asset re-use means repeat revenue AND cost savings flowing straight to the bottom line. A no-brainier.' (Rao, 2003, p. 383).

PRs also serve some of the interests of the *middle managers* who have the role of sponsors for most of the PRs. Fred claimed that the PR served the purpose of building a stronger team and that it enabled him to implement new ways of working. This statement is backed up by Chris in his role as sponsor: *'A PR is good for the team, as they get time to reflect on their experience from a specific task. They realize the current state, and they plan for future actions to achieve the goal'* (online PR). JM commented on PR for learning for IT system implementation projects and stated that PR served the purpose of raising awareness of the implementation process and gave full support to minor changes for the future implementations, which would save time and money (online PR). But Chris was also concerned about the PR. He said '*The challenge of a PR is for the Sponsor to take the actions forward and monitor them'* (online PR).

What interests of *the facilitators* may PRs serve? According to E, '*Being a facilitator, you help people out and you contribute to move things forward and find solutions; that is my main driver: to help people, and by doing that, helping the organization'* (online PR). It seems like a very personal purpose that also supports the business. This research has focused on the role of the facilitator and has only briefly gathered data on the motivation to be a facilitator or the satisfaction derived from being a facilitator.

Individual employees have pointed out that PR served their interests by putting emotions into words. As Dan claimed, '*A benefit from the AAR is to get rid of frustration, stress etc.'* ('how to expand individual knowledge…', Dan's presentation). Janet said that 'The PR gave us a unique chance to be open and honest about painful questions' and '*It was very important for me to hear the ideas of the other delegates and I was asked to share my dreams… I am not used to that'* (prerequisites for dialogue). PR served the purpose of the individual need for being human in the context of work in the sense that PR made space for emotions to be formulated. PR became a door through which emotions were allowed to pass in order to be shared and transformed in collaboration with peers.

The example in the article *Lessons learned* included a *customer's* participation in PR, which may have served the purpose of giving feedback in terms of the customer giving feedback to the

global IT company and vice versa. For the global IT company, the PR served the purpose of learning from the first implementation of the X program and improving customer relations. The action and communication plan (X program summary) indicates that the PR served the purpose of enhancing the commitment to future cooperation between the two parties.

The example of 100% growth described in the 'online PR' includes a comment on *partners*. '*We have made a standard process for working with third party, and we now have established excellent teamwork with our XX partners*,' says Chris (online PR). In this example, the PR served the purpose of improving cooperation with partners for the global IT company.

The most important stakeholders in the global IT company are the stockholders. PR serves the stockholders' interests (financing a stable business) by helping the top management, middle management and employees to avoid repeating mistakes and to repeat positive experiences. From an economic perspective, PR serves the interests of the stockholders by reducing costs and improving efficiency. The reduced costs stem from avoiding repeating mistakes and repeating successes. From a customer perspective, PR serves the interests of the stockholders as PRs involving customers lead to a closer relationship between the IT company and its customers. From an internal perspective, PR serves the interests of the stockholders by identifying what needs changing not only from the top management point of view but from the point of view of all hierarchical levels across the organization. From a learning and growth perspective, PR serves the interests of the stockholders because it leads to learning from experience, revealing needs for learning and for the innovation of new ways of working, improved services and new products.

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6 CONCLUSION

> *'Think of one research result that has made a difference in their educational practice. It is both surprising and depressing that many educators cannot think of a single research output…that meet this most practical and important outcome of research'* (Anderson & Shattuck, 2012, p. 18).

My aim for this PhD study was to provide a deep understating of how to initiate and maintain learning from experience in the context of work. Below, I present the conclusions that show that I have deepened my understanding of what it takes to initiate and maintain PR.

PR started with the pilot project testing AAR, which was a patterned set of activities developed through several iterations. The new educational design became a knowing-in-practice over the years and ended up becoming a doing of society (Gherardi, 2012). The PR that was developed and implemented changed from being an educational design to being an educational practice in the global IT company.

As discussed in the following, this study has made a difference in the educational practice in a global IT company. First, the educational practice transformed from being a pilot project to being a final educational design consisting of *seven questions* in a PR. Second, this study provides a suggestion for a new educational practice of *online* learning from experience in the context of work. Third, the research results made a difference in the educational practice by suggesting *trained facilitators* conduct the learning process and by defining the ideal requirements for the facilitators. Fourth, the research results have made a difference in the educational practice by involving four organizational levels in the learning process and by describing the obligations of *the four roles* representing the four organizational levels—participants (employees at any hierarchical level), trained PR facilitators who

are held in esteem by colleagues, middle managers and top managers. Fifth, the research results have made a difference in the educational practice by suggesting *codes of conduct* for PRs, for example, 'we are here to learn', 'the dialogue in a PR is confidential' and 'everybody contributes on equal terms'. Sixth, the research results provide *organizational requirements*, such as 'learning is a part of the strategy' and 'allow only one to three formal power levels to be represented in a PR', for initiating and maintaining PRs in companies classified as big business.

The research question

What may we learn from seven years of developing an educational design for learning from experience in the context of work when work is situated in a global high-tech company classified as big business?

Below, I will condense the learning from the five iterations and the learning from the discussion in chapter five.

PR is a suggestion for an educational design for learning from experience in the context of work when work is situated in a global IT company classified as big business. The subjects for learning in a PR may be any group of employees. PRs may be initiated to repeat positive experiences as well as to learn from disturbances, contradictions or conflicts. Any employee is allowed to initiate a PR, no matter his/her position in the organizational hierarchy. The defined purpose of the PR was formulated as a question that the participants were supposed to answer. The participants had shared a task.

The participants in PRs make the effort to learn in order to contribute to *'culturally valued collaborative practices in which something useful is produced' (*Engeström, 2001, p. 141). In the global IT company *'something useful to be produced'* turned out to be improved work practices or services that were identified, described and presented as tangible outcomes of the PR (being the action and communication plan and the management challenges).

The key actions for learning in PRs are *dialogues* that require equality between the participants, Ba characterized by trust and care, *management support* that empower the participants and learning included in the *strategy*.

The PhD study described the importance of having a trained facilitator to maintain Ba, and the critical competences for facilitators were presented. In order to maintain Ba, codes of conduct were developed and presented. The codes of conduct may be seen as the ground rules for participating in PRs. When more

hierarchy levels are involved in the learning process, more roles are involved. This PhD study describes the roles of top management, middle managers, participating employees and the facilitators, including their obligations in regards to learning from PRs.

PRs could not 'just' be moved from a face-to-face setting to an online setting. Even though the seven questions did not change in the online PR, the way of facilitating and participating changed. The new setting required two facilitators instead of one, and the codes of conduct changed in order to overcome the lack of body language. Thus, the research results made a difference in the educational practice. Still, this is an area that requires further investigation.

The context was important for learning in the context of work, and this PhD study identified organizational requirements for initiating and maintaining PRs not only in this global IT company but in general for high-tech companies classified as big business. The organizational requirements, the codes of conduct and the educational design constitute important parts of the context for PR.

The learning in PRs may be compared to the ripple effect after throwing a stone in the water. It includes four ontological dimensions. The learning starts when the stone hits the water, which represents an individual employee who shares his/her insights and reflections with her/his team, which in turn shares their insights and new knowledge with other teams and with the organization. Sometimes the organization shares doubts or positive experiences with cooperating organizations, which may lead to inter-organizational learning. The four ontological dimensions are interwoven as the individual employee is positioned in the surrounding 'waves' and the 'waves' influence each other. Enablers for the ripple effect are the organizational requirements, for example, the activities initiated by the management challenges, the action and communication plan or the codes of conduct. Obstacles to the ripple effect are the show stoppers; for example, the sponsor might not want to implement the action and communication plan.

This PhD project '*indicates ways in which realities may be changed*' (Dewey, 1908, p. 88) by inviting employees to learn from experience. The new knowing may produce physical changes in terms of things (Dewey & Boydston, 1976 p. 348) being improved, such as work practices, services or products that are important parts of the reality of the organization. Thus, the reality changed as PR was implemented and became a common practice in the global IT company. This specific practice changed realities; work

practices were changed and new services were invented and became available to customers and partners. The realities of the employees changed as a result of the implementation of PRs because they were asked to create 'truly new concepts and solutions' to the problems they identified.

Inspired by Gherardi (2012) this PhD study had read practice 'from the outside' where the lenses consisted of a scientific approach that looked for a patterned set of activities defined by the included theories and methodology. Practice was then read 'from the inside' when I utilised knowing-in-practice gathered during the data collection that mirrored the insights, emotions and perceptions of the people I studied. PR may now be seen as a social practice, as it became 'a part of the DNA', as a senior vice president put it. The trained facilitators and the vast numbers of participants in PR made the educational design a 'knowing-in practice' that embraces employees from all hierarchical levels of the global IT company.

PR enabled learning across knowledge hierarchies to become learning across divisions and national borders within a global IT company. Learning from PRs starts with the perspective of the learner who constructs knowing in collaboration with peers. PRs end up having tangible and intangible results. The tangible results may be changed work practices or improved products or services. The intangible results may be new insights, less frustration or improved team spirit.

This PhD study was a voyage into unknown territory, where I encountered mysteries. Hopefully, you will have found that I solved some of those mysteries. There are more mysteries out there waiting to be explored, and I would like to describe what could be my next adventure.

7 FUTURE RESEARCH

The relationship between people and organizations is challenging in many ways, including globalization where organizations offshore activities in order to save costs. Globalization implies that organizations change from having local organizational entities to having divisions crossing geographical borders. Some of the implications are that employees at all levels collaborate online instead of face to face and that they collaborate in a foreign language with peers with different cultural backgrounds. This change raises the need to find new balances between various dimensions of work, incorporating the creation of trust between online peers and between online manages and teams. I would like to investigate the field of online management of traditional teams or divisions or online leadership of voluntary work in, for example, communities of practice, and I would like to study this new way of collaboration from a learning perspective.

What does it mean to lead people online? What does it mean to be led by an online manager? Here, I could problematize the term 'leader' and examine the interfaces between the paradigm of management and the paradigm of learning in organizations. I will look into the role of the manager being 'leader' or being a 'facilitator' of ongoing learning within his team. Furthermore, I will activate knowing about online learning and facilitation where there is a long tradition of considering the interface between mediation and facilitation.

What does it mean to collaborate online? Here, I will problematize what power is, how it unfolds and how it is refined,

enhanced and enforced in online collaboration. I will explore the term 'trust' in order to determine how trust is perceived in the team and the organization and what it takes to create trust online, if that is possible. Furthermore, I would like to study how online trust influences the ability to learn in the context of work.

My ambition is to identify ways of working that employees at all levels find beneficial when working online and to develop new theories to better understand the online working environment, including new ways of thinking and leading, new alternative possibilities for collaborative learning online and the consequences for practice.

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9 APPENDIX

9.1 OBSERVATION GUIDE

What to observe and why

Full or passive participation, motivation

Ethical implication

Access

Full or passive participation, motivation

Report/notes
Back ground
Actors
Place
Time
Actions

Communicate the results

Wondering

*******???
Analysis and interpretation

Validity

Reliability

9.2 INTERVIEW GUIDE

1. Define the purpose of the research/the interview

The manager's engagement in and support of PRs

2. Develop the research design

The first manager that asked for an PR
Interview at the date and time the manager suggested
The interview took place in an internal meeting room and was scheduled for one hour
No recording, only handwritten notes taken by the researcher/interviewer
The manager was to read and correct the story based on the interview.

Research question	**Interview Question**	**Answer**
What is the organisational setting?	Please describe the line of business where the PR took place What process did you run an PR on?	
Perspective of end-user, super-user or researcher	What is your role?	
The motivation for trying out the new educational design	Why did you run an PR?	
Feedback on the educational design and the outcome	Please share the pros and cons of the PR method as you experienced them?	
Most suitable time for running PRs	Did you do the PR before, during or after the	

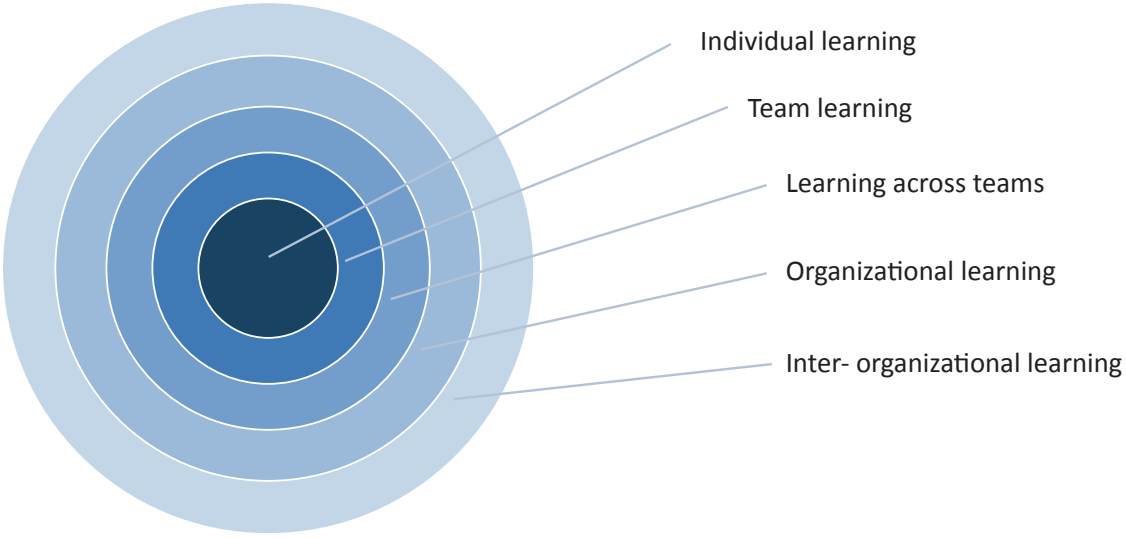
	process? Why?	
Contributions to organisational learning	What is the impact of the PR on your part of the organization?	
Document the degree of success	What did you gain from the PR as the manager? How do you intend to use PR in the future?	

3. Do the interview
4. Write the transcription of the interview
5. Identify methods for analysis and analyse the interview-transcription
6. Ensure high quality
7. Communicate the results

(Kvale 2002: 95)

9.3 AN AGENDA TO A PR COMMUNITY CALL

- Welcome to new members of the PR Community
- PR Exemplar announcement
- Organisational Learning Spiral
- Key Topics addressed in FYxx
- Benefits of using the PR application (Facilitator E)
- Experience from involving a partner into PR (Facilitator H)
- How can the EMEA PR Community team support you in FYxx?
- The new strategy for FYxx



SUMMARY

This PhD study has made a difference in the educational practice in a global IT company classified as big business where Proactive Review (PR) was developed and implemented over a period of seven years. This study inquires organizational learning from a learning perspective, and suggests PR as an educational design for learning from experience in the context of work. The subjects for learning in a PR may be any group of employees. PRs may be initiated to repeat positive experiences as well as to learn from disturbances, contradictions or conflicts.

The PR consists of seven questions. This PhD study provides a suggestion for online PR. The research results suggest a new learning spiral including four ontological dimensions, namely the individual employee learning, the team learning, the organizational learning and the inter-organizational learning.

This PhD study contributes to the methodology of Design-Based Research (DBR) with a suggestion of a new DBR–flow that follows a sequence of nine steps, and by suggesting specific requirements for 'good' DBR.

The research results made a difference in the educational practice by suggesting trained facilitators conduct the PR and by defining the ideal requirements for these facilitators. PR involves four roles, namely the participants, the PR facilitators, middle managers and top managers. This PhD study describes the obligations of these four roles.

ISSN: 2246-123X
ISBN: 978-87-7112-201-5

AALBORG UNIVERSITY PRESS